SERVICE

AIWA

HV-E101DKGPS

VIDEO CASETTE PLAYER

VHS PAL

video

1

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SPECIFICATIONS

PLAYBACK SYSTEM

Video: rotary 2 heads helical scan system
Audio: fixed head

VIDEO SIGNAL
PAL/MESECAM color signal,
625 lines, 50 Hz

PLAYBACK TIME
4 hours max. with E-240 tape, standard speed

TAPE WIDTH
12.65 mm

TAPE SPEED
Standard speed, 23.39 mm/sec.

USABLE CASSETTE
VHS video cassette

RF OUTPUT
UHF channel between 30 and 39
G PAL/G SECAM
K PAL/K SECAM output

VIDEO OUTPUT
1.0 Vp-p, 75 ohms unbalanced

AUDIO OUTPUT
-8dBs, 3.3k ohms, unbalanced

OPERATING TEMPERATURE
5°C - 40°C

POWER REGUIREMENTS
110 - 240V AC, 50/60Hz

POWER CONSUMPTION
20 watts

DIMENSIONS
270(W)×95(H) × 355.5(D)mm

WEIGHT 4,2 kg

INPUT/OUTPUT
Audio output(AUDIO OUT): phono jack(1)
Video output(VIDEO OUT): phono jack(1)
Antenna input(AERIAL): IEC connector, 75 ohms(1)
Antenna output (RF OUT): IEC connector 75 ohms (1)

• DESIGN AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

BASIC VIDEO MECHANISM: TN-5900 * TYPE H.

BASIC VIDEO MECHANISM : TN-5900/TYPE H

PRACTICAL SERVICE FIGURE

Output Level	
Video (Impedance) :	1.0 ± 0.2 Vp-p (75Ω ± 20%, Unbalance)
Audio (Impedance):	-8 ± 3dB (Less than 3.3kΩ)
RF modulated (Impedance):	75 ± 3dB μV (75Ω, Unbalance) 30~39 CH (UHF)
S/N Ratio	
Video (SP model): (Test tape MVP-08, MVP-09)	More than 42dB (Y-Singal) More than 38dB (Chrom.-Signal, AM) More than 36dB (Chrom.-Signal PM)
Audio (SP mode):	More than 36dB
(Test tape A-BEX TTV-P1)	
Audio Frequency Response: SP mode, Test tape A-BEX TPV-160S)	200 Hz ~ 6kHz (±4dB)
Tape speed:	SP mode 23.39mm/sec ± 0,5%
Horizontal Resolution : Test tape (TTV-06T)	More than 230 lines
Wow & flutter: (Test lapeTTV-P5, CCIR WID)	Less than 0,4 %
F.F time:	Less than 300 sec (E-240)
REW time:	Less than 300 sec (E-240)
Black tension :	46.5 ± 12g-cm
Loading :	Less than 3 sec
Unloading :	Less than 3.5 sec

STANDARD MAINTENANCE

1. SERVICE SCHEDULE OF COMPONENT

○ : Check ● : Change

DECK		Periodic Service Schedule			
Ref. No.	Parts Name	1000h	2000h	3000h	4000h
2-2	UPPER DRUM	○	●	○	●
4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	FL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV 224206			●	
3-25	REEL ASSY			●	

NOTE:

1. Clean all parts for the tape transport.
   Upper Drum with video head / Pinch Roller
   Audio Control Head
2. After cleaning up the parts, perform all DECK ADJUSTMENT

STANDARD MAINTENANCE

1. SERVICE SCHEDULE OF COMPONENT

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2-2	UPPER DRUM	○	●	○	●
4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	FL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV224206			●	
3-25	REEL ASSY			●	

NOTE:

1. Clean all parts for the tape transport.
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   Audio Control Head
2. After cleaning up the parts, perform all DECK ADJUSTMENT

SCHEMATIC DIAGRAM- (VIDEO)

A MAIN (Y/CHROMA SECTION) C.B (2/3)

J201-2 VIDEO OUT

RF MOD RF201 (V V(G) A 5V NC)

SW201 HARD SOFT PIC

POWER SW Q220 2SA1048Y

Q201 2SA1048Y BUFFER

Q221 DTC144ES POWER SW

Q213 DTC144ES

Q212 2SC2458Y

Q211 2SC2458Y BUFFER

Q212,Q213 TRAP

D205 1SS133

X201 4.43MHz

IC202 LA7331N COLOR PROCESS

IC201 LA7323 Y-PROCESS

IC203 LC8992 1H DELAY CCD

Q203 2SC2785 LPF

Q204 2SA1048Y BUFFER

Q205 2SC2785E BUFFER

Q206 2SC2785E Y-AMP

Q207 2SC2758E BUFFER

Q215,216 PB.CHROMA AMP.

Q217,218 CHROMA AMP.

Q215 2SC2458Y

Q216 2SC2458Y

Q217 2SC2458Y

Q218 2SC2458Y

LPF201

LPF202

BPF201

CF201

DL201 COMB FIL 4.43

TP201 (YD)

SFR203 PB Y LEVEL ADJ.

SFR202 YD LEVEL ADJ.

TO AUDIO 1B, 2B

TO SERVO SYSTEM CONT 1C-4C

TO C HEAD C.B CON201

TO SERVO/SYSTEM CONT. SC

TO C HEAD C.B PIN801

TO SERVO/SYSCON 6C. 7C

AUDIO (Y)	2B
AUDIO (X)	1B
JOG	1C
JOG VD	2C
EVER +5V	3C
FSC	4C
RF SWP	5C
REG GND (V)	6C
REG 9V	7C

PIN 201

1	Y PB (X)
2	Y PB (Y)
3	C PB (X)
4	C PB (Y)
5	EVER +5V
6	GND
7	RF SWP

CON802

5	BGP 1
4	GND 2
3	EVER +5V 3
2	C PB 4
1	PAL INESEC 5

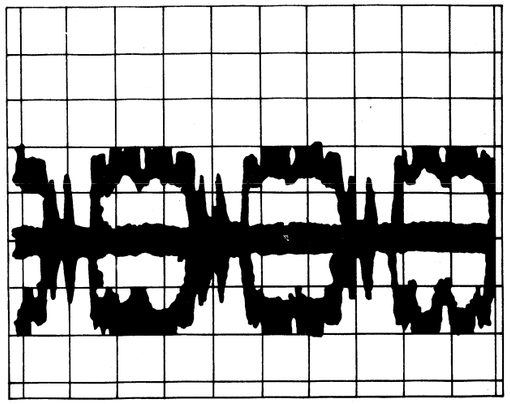
:Y SIGNAL WAVEFORM NO.

:CHROMA SIGNAL

PB CHROMA SIGNAL

CHROMA system IC202 pin (23) 50mV/DIV 20µs/DIV

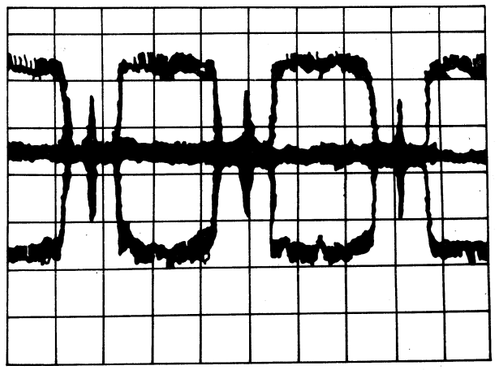
(16)



PB CHROMA SIGNAL (TTV-P1)

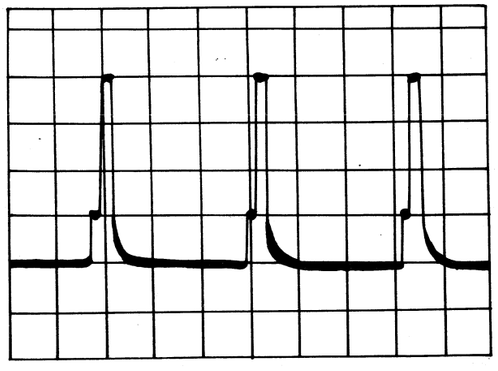
IC801 Pin (5) 50mV/DIV 20µs/DIV

(17)

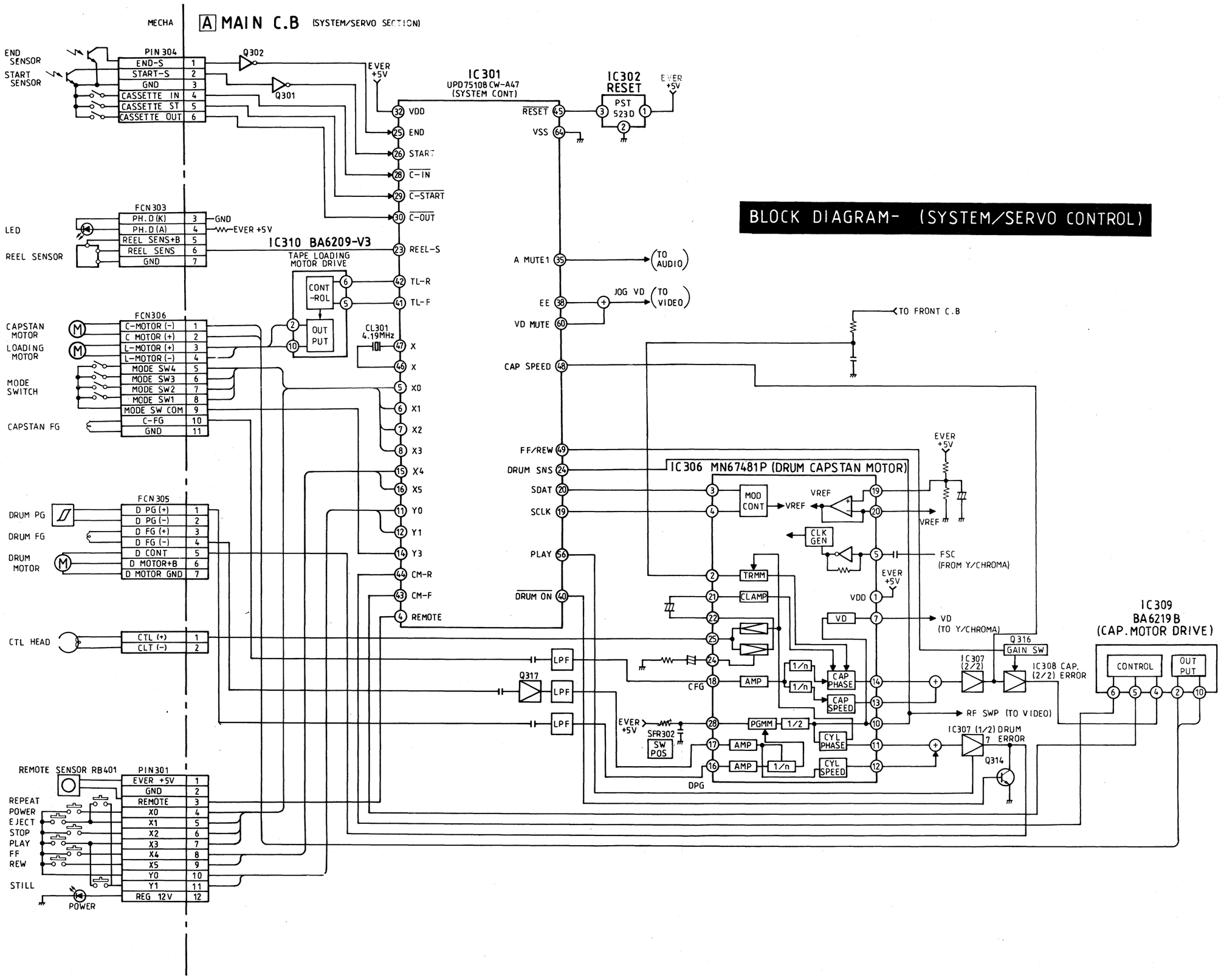


IC801 Pin (7) 1V/DIV 20µs/DIV

(18)



BLOCK DIAGRAM- (SYSTEM/SERVO CONTROL)



A MAIN (SERVO/SYSTEM CONT. SECTION) C.B (1/3)

SCHEMATIC DIAGRAM- (SYSTEM/SERVO CONTROL)

M1 (DRUM MOTOR)
F RELAY C.B-1 PIN 503
I RELAY C.B-3 CON 503
FC503 / FCN 305
D PG(+) D PG(-) D FG(+) D FG(-) D CONT D MOTOR+B D MOTOR GND
M2 (CAPSTAN MOTOR)
M3 (LOADING MOTOR) CON2
E PIN2 BASE C.B
H RELAY C.B-2 CON502 FC502 FCN306
C.MOTOR (-) C.MOTOR (+) L.MOTOR (+) L.MOTOR (-) MODE SW4 MODE SW3 MODE SW2 MODE SW1 MODE COM C-FG
MODE SWITCH
DS1 DEW SENSOR CON4
O LED C.B CON3 LED1 LN59
CP1 ON1385 (RELL SENSOR)
R2 220 R1 5.6K D1 US1040M
TO B FRONT C.B CON301
PIN301: EVER+5V GND REMOTE X0 X1 X2 X3 X4 X5 Y0 Y1 REG 12V
CON 501 FC501 FCN303
DEW SENS(X) DEW SENS(Y) PH.D(K) PH.D(A) REEL SENS +B REEL SENS GND
M END SENSOR C.B Q1 PH 150ET C1 0.001
N START SENSOR C.B Q2 PH 150ET C2 0.001
G SWITCH C.B CON504 SW1 (IN SW) SW2 START SW SW3 (OUT SW)
K RELAY -C.B-5 PIN504 CON304 PIN304
END SENS START SENS GND CASSET IN CASSET ST CASSET OUT

Q317 PG AMP/INVERTER
Q314 ERROR OUT SWITCH
IC307 DRUM SERVO ERROR AMP IC307(1/2) M5223L
IC309 CAPSTAN MOTOR DRIVE
IC309 BA6219B
IC310 BA6209-V3
IC310 TAPE LOADING MOTOR DRIVE
IC308(2/2) CAPSTAN SERVO ERROR AMP M5223L
IC307,308
IC307(2/2) M5223L
Q316 AMP GAIN CHANGE SWITCH
Q315 DTC144ES
Q313 DTA144ES
Q312 DTC144ES
PLAY:0 STOP:4.9
PLAY:4.8 STOP:0
PLAY.CUE.PAUSE:4.8
REV 2.5
FF,REW:4.9
STILL:4.8
IC306 DRUM CAPSTAN SERVO
IC306 MN67481P
VDD TR MM SDAT SCLK RCLK VLP MODE0 MODE RF SWP PWM2 PWM1 PWM3 PWM4
PGMM VSYN AVDD CTLH CTLA CTLG CO C1 VRO R1 FG1 YFG YPG VSS
TP301 (RF SWP)
TP302 (CTL)
SFR302 SWITCHING POSITION ADJ
D305 1SS133 STILL 0.1
D306 1SS133
D315 1SS133
D309 1SS133
D303 1SS133
D304 1SS133
D307 1SS133
D308 1SS133
IC310 SYSTEM CONTROL
IC301 UPD75108CW-A47
TEST JOG VD REMOTE X0 X1 X2 X3 AUTO PLAY Y0 Y1 Y2 Y3 X4 X5 X6 SCLK SDAT REEL SENS DRUM SNS END START REC SAFETY C IN C START C OUT VDD
VSS POWER D PB REPEAT VD.MUTE FF REW PLAY STILL CAP SPEED RESET CM-R CM-F TL-R TL-F DRUM ON EE A MUTE1 RST P JOG
Q301,302 BUFFER INVERTER
Q301 DTA115ES
Q302 DTA115ES
IC302 PST 523D
IC302 POWER ON RESET
CL301 4.19M
D310 DOC PULSE SHAPER
EVER +5V
REG +12V
UNREG +17V
GND
NC

SCHEMATIC DIAGRAM-(SYSTEM/SERVO CONTROL)

A MAIN (SERVO/SYSTEM CONT. SECTION) C.B (1/3)

H RELAY C.B-2 CON502

	FC502	FCN306
1	C.MOTOR (-)	1
2	C.MOTOR (+)	2
3	L.MOTOR (+)	3
4	L MOTOR (-)	4
5	MODE SW4	5
6	MODE SW3	6
7	MODE SW2	7
8	MODE SW1	8
9	MODE COM	9
10	C-FG	10
11	C-FG	11

I RELAY C.B-3 CON503

	FC503	FCN305
1	D PG +	1
2	D PG -	2
3	D FG +	3
4	D FG -	4
5	D CONT	5
6	D MOTOR+B	6
7	D MOTOR GND	7

PIN301

EVER+5V	1
GND	2
REMOTE	3
X0	4
X1	5
X2	6
X3	7
X4	8
X5	9
Y0	10
Y1	11
REG 12V	12

FC501 FCN303

1	DEW SENS(X)	1
2	DEW SENS(Y)	2
3	PH.D(K)	3
4	PH.D(A)	4
5	REEL SENS +B	5
6	REEL SENS	6
7	GND	7

PIN504 CON304 PIN304

1	END SENS	1
2	START SENS	2
3	GND	3
4	CASSET IN	4
5	CASSET ST	5
6	CASSET OUT	6

RELAY C.B-5

Q317 2SC2458GR — PG AMP/INVERTER

IC309 BA6219B — CAPSTAN MOTOR DRIVE

IC310 BA6209-V3 — TAPE LOADING MOTOR DRIVE

IC307 — DRUM SERVO ERROR AMP

IC307(1/2) M5223L

IC308(2/2) M5223L — CAPSTAN SERVO ERROR AMP

IC307(2/2) M5223L

Q314 DTC144ES — ERROR OUT SWITCH

Q313 DTA144ES

Q316 DTC144ES — AMP GAIN CHANGE SWITCH

Q315 DTC144ES

Q312 DTC144ES

Q301, 302 BUFFER INVERTER

Q301 DTA115ES

Q302 DTA115ES

IC306 MN67481P — DRUM CAPSTAN SERVO

1	VDD	PGMM	28
2	TR MM	VSYN	27
3	SDAT	AVDD	26
4	SCLK	CTLH	25
5	RCLK	CTLA	24
6	—	CTLG	23
7	VLP	CO	22
8	MODE0	C1	21
9	MODE	VRO	20
10	RF SWP	R1	19
11	PWM2	FG1	18
12	PWM1	YFG	17
13	PWM3	YPG	16
14	PWM4	VSS	15

IC310 SYSTEM CONTROL — IC301 UPD75108CW-A47

1	TEST	VSS	64
2	—	POWER	63
3	JOG VD	D PB	62
4	REMOTE	REPEAT	61
5	X0	VD.MUTE	60
6	X1	FF	59
7	X2	REW	58
8	X3	—	57
9	—	PLAY	56
10	AUTO PLAY	STILL	55
11	Y0	—	54
12	Y1	—	53
13	Y2	—	52
14	Y3	—	51
15	X4	—	50
16	X5	FF/REW	49
17	X6	CAP SPEED	48
18	—	X	47
19	SCLK	X	46
20	SDAT	RESET	45
21	—	CM-R	44
22	—	CM-F	43
23	REEL SENS	TL-R	42
24	DRUM SNS	TL-F	41
25	END	DRUM ON	40
26	START	—	39
27	REC SAFETY	EE	38
28	C IN	—	37
29	C START	—	36
30	C OUT	A MUTE1	35
31	—	RST P	34
32	VDD	JOG	33

IC302 POWER ON RESET — IC302 PST 523D

IC308(1/2) M5223L

D310 DOC PULSE SHAPER

SFR302 SWITCHING POSITION ADJ

TP301 (RF SWP)

TP302 (CTL)

CL301 4.19M

PIN308

1	UNREG GND
2	UNREG GND
3	UNREG +17V
4	REG +12V
5	REG +9V
6	EVER +5V
7	EVER +5V
8	REG GND(V)
9	REG GND(S)
10	REG GND(A)
11	POWER ON/OFF

PIN302

1	TRACON
2	LED REPEAT

TO Y/CHROMA SECTION 2C.4C — JOG VD 2C, FSC 4C

TO AUDIO SECTION 4A.5A — CTL (-) 5A, CTL (+) 4A

TO AUDIO SECTION 1A.2A — REG GND(A) 2A, REG 9V 1A

TO Y CHROMA SECTION 3C.6C.7C. — EVER +5V 3C, REG 9V 7C, REG GND(V) 6C

TO [D] POWER-UNIT C.E CON101

TO Y CHROMA SECTION 1C — JOG 1C

TO [B] FRONT C.B CON302

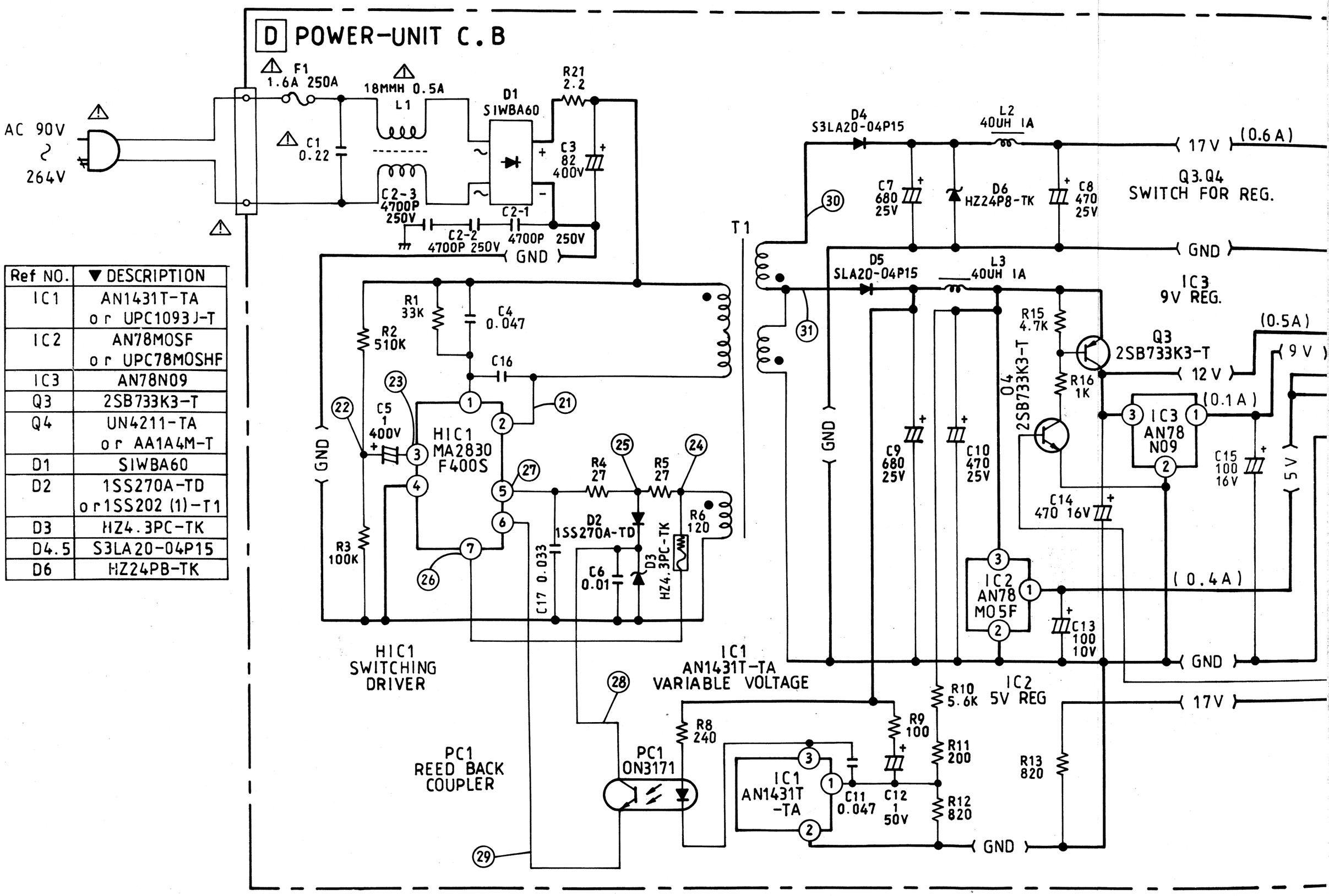
TO Y/CHROMA SECTION 5C — RF SWP 5C

TO AUDIO SECTION 3A — A MUTE 3A

WAVEFORMS NO.

D POWER-UNIT C.B

Ref NO.	▼ DESCRIPTION
IC1	AN1431T-TA or UPC1093J-T
IC2	AN78M05F or UPC78M05HF
IC3	AN78N09
Q3	2SB733K3-T
Q4	UN4211-TA or AA1A4M-T
D1	S1WBA60
D2	1SS270A-TD or 1SS202 (1)-T1
D3	HZ4.3PC-TK
D4.5	S3LA20-04P15
D6	HZ24PB-TK



D4
20-04P15

L2
40UH 1A

17V (0.6A)

C7
680
25V

D6
HZ24P8-TK

C8
470
25V

Q3.Q4
SWITCH FOR REG.

GND

D5
A20-04P15

L3
40UH 1A

IC3
9V REG.

R15
4.7K

Q3
2SB733K3-T

(0.5A)

9V

12V

R16
1K

Q4
2SB733K3-T

(0.1A)

IC3
AN78
N09

C15
100
16V

5V

C9
680
25V

C10
470
25V

C14
470 16V

IC2
AN78
M05F

(0.4A)

C13
100
10V

GND

IC2
5V REG

17V

R10
5.6K

R9
100

R11
200

R13
820

C12
1
50V

R12
820

GND

CON101	
1	UNREG. GND
2	UNREG. GND
3	UNREG. 17V
4	REG +12V
5	REG +9V
6	EVER +5V
7	EVER +5V
8	GND
9	GND
10	GND
11	P ON/OFF

TO
A MAIN
(SERVO/SYSCON)
PIN308

A MAIN (AUDIO SECTION) C.B (3/3)

R187 220

IC 181 NJM4558S PRE AMP

GND

R191
470

R195
47K

R183
220

R186
820

R185
3.9K

R184
120K

C189
10
50V

R190
2.7K

R196
4.7K

C190
1000P

Q181
2SC2001K
MUTING

D181
1SS133

R188
330

C183
10
50V

C185
10
50V

C184
0.027
Ⓜ

C188
270P

R189
47K

C186
22
25V

R192
47K

REG 9V

R194
10K

R193
10K

C181
47
10V

C187
47
10V

R181
100

R182
33K

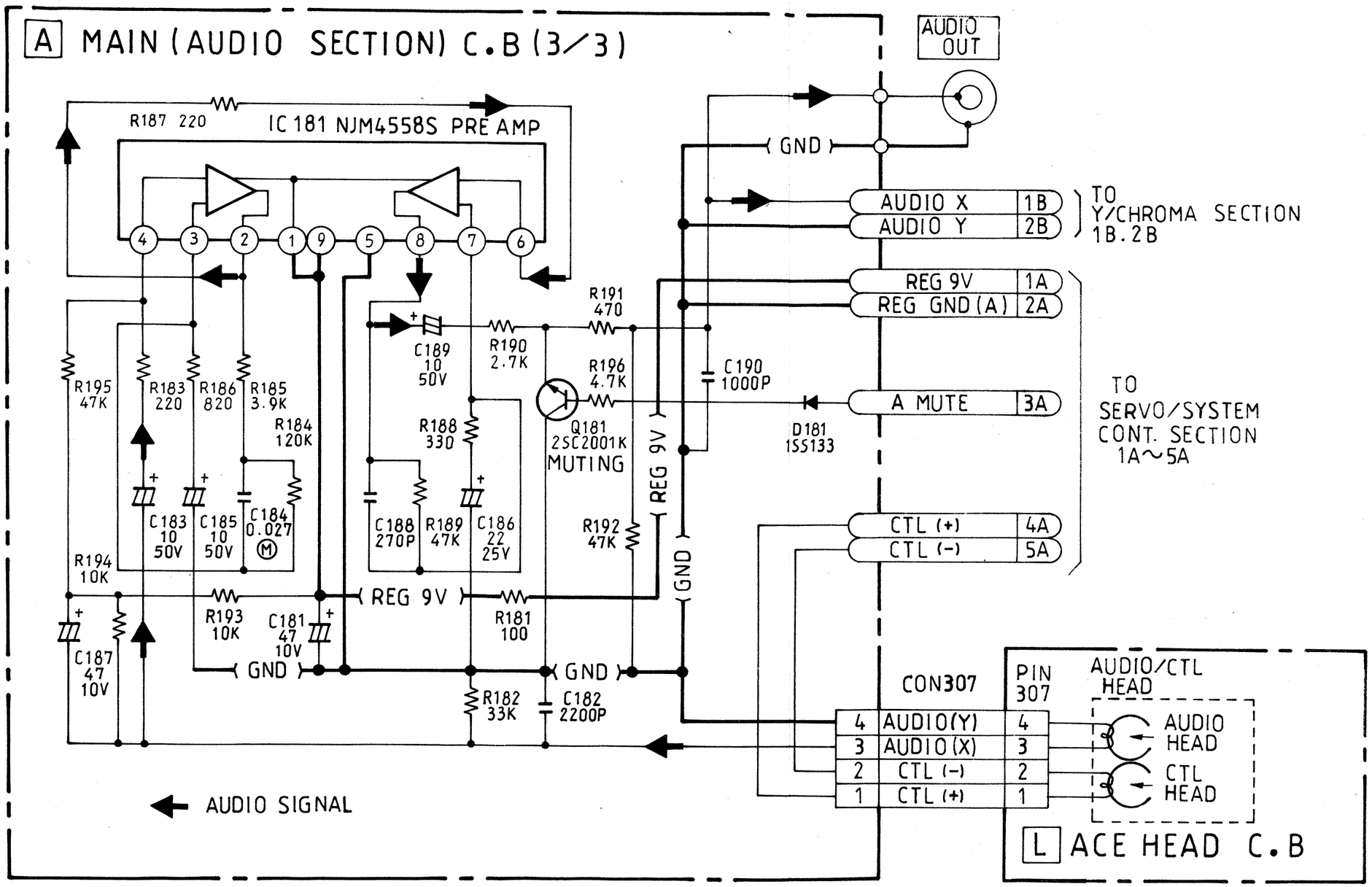
C182
2200P

AUDIO SIGNAL

SCHEMATIC DIAGRAM-4 (POWER UNIT/AUDIO) WIR

CON101	
1	UNREG. GND
2	UNREG. GND
3	UNREG. 17V
4	REG +12V
5	REG +9V
6	EVER +5V
7	EVER +5V
8	GND
9	GND
10	GND
11	P ON/OFF

TO
[A] MAIN
(SERVO/SYSCON)
PIN308



SCHEMATIC DIAGRAM-4 (POWER UNIT/AUDIO) WIRING-3 (POWER UNIT)

WIRE HARNESS DIAGRAM

B FRONT C.B

CON301

1	EVER +5V
2	GND
3	REMOTE
4	X 0
5	X 1
6	X 2
7	X 3
8	X 4
9	X 5
10	Y 0
11	Y 1
12	REG 12V

CON302

1	TRA-CON
2	LED REPEAT

CONN ASSY, 12P FR-1

CONN ASSY, 2P FR-3

PIN302

1	TRA-CON
2	LED REPEAT

PIN301

1	EVER +5V
2	GND
3	REMOTE CONT.
4	X 0
5	X 1
6	X 2
7	X 3
8	X 4
9	X 5
10	Y 0
11	Y 1
12	REG 12V

CONN ASSY, 6P ES

PIN304

1	END SENS.
2	START SENS.
3	GND
4	CASSET IN
5	CASSET ST.
6	CASSET OUT

CON304

END SENS.	1
START SENS.	2
GND	3
CASSET IN	4
CASSET ST.	5
CASSET OUT	6

K RELAY C.B-5

PIN504

1	END SENS.
2	START SENS.
3	GND
4	CASSET IN
5	CASSET ST.
6	CASSET OUT

G SWITCH C.B

CON504

END SEN.	1
START SEN.	2
GND	3
CASSET IN	4
CASSET ST.	5
CASSET OUT	6

M END SENSOR C.B

N START SENSOR C.B

H RELAY C.B-2

CON 502

1	C.MOTOR(-)
2	C.MOTOR(+)
3	L.MOTOR(+)
4	L.MOTOR(-)
5	MODE SW4
6	MODE SW3
7	MODE SW2
8	MODE SW1
9	MODE COM
10	C.FG
11	C.FG

FC502

F-CABLE 11-2.0 170

FCN 306

1	C.MOTOR(-)
2	C.MOTOR(+)
3	L.MOTOR(+)
4	L.MOTOR(-)
5	MODE SW4
6	MODE SW3
7	MODE SW2
8	MODE SW1
9	MODE SW COM
10	C.FG
11	C.FG

E BASE C.B

PIN502

C.MOTOR(-)	1
C.MOTOR(+)	2
L.MOTOR(+)	3
L.MOTOR(-)	4
MODE SW4	5
MODE SW3	6
MODE SW2	7
MODE SW1	8
MODE CON	9
C.FG	10
C.FG	11

PIN1 CON1

1	C.MOTOR(+)	1
2	C.MOTOR(-)	2
3	C.FG	3
4	C.FG	4

M1 (CAPST. MOTOR)

PIN2 CON2

1	L.MOTOR(-)	1
2	L.MOTOR(+)	2

M3 (LOADING MOTOR)

PIN3 CON3

1	PH.D(A)	1
2	REEL SENSOR+B	2

O LED C.B

PIN4 CON4

1	DEW SENS(Y)	1
2	DEW SENS(X)	2

DS1 (DEW SENSOR)

A MAIN C.B

FCN 303

1	DEW SENS(X)
2	DEW SENS(Y)
3	PH.D. (K)
4	PH.D. (A)
5	REEL SENS +B
6	REEL SENS
7	GND

CON 501

1	DEW SENS (X)
2	DEW SENS (Y)
3	PH.D. (K)
4	PH.D. (A)
5	REEL SENS+B
6	RELL SENS
7	GND

FC501

F-CABLE 7-2.0 200

PIN501

DEW SENS (X)	1
DEW SENS (Y)	2
PH.D. (K)	3
PH.D. (A)	4
REEL SENS+B	5
RELL SENS	6
GND	7

I RELAY C.B-3

FCN305

1	D.PG (+)
2	D.PG (-)
3	D.FG (+)
4	D.FG (-)
5	D.CONT
6	D.MOTOR +B
7	D.MOTOR GND

CON 503

1	D.PG (+)
2	D.PG (-)
3	D.FG (+)
4	D.FG (-)
5	D.CONT
6	D.MOTOR +B
7	D.MOTOR GND
8	N.C.
9	N.C.

FC503

F-CABLE 7-2.0 400

PIN503

D.PG (+)	1
D.PG (-)	2
D.FG (+)	3
D.FG (-)	4
D.CONT	5
D.MOTOR +B	6
D.MOTOR GND	7
N.C.	8
N.C.	9

F RELAY C.B-1

M1 (DRUM MOTOR)

PIN308

UNREG GND	1
UNREG GND	2
UNREG +17V	3
REG +12V	4
REG +9V	5
EVER +5V	6
EVER +5V	7
GND(V)	8
GND(S)	9
GND(A)	10
POWER ON/OFF	11

CONN ASSY, 11P PS

CON101

1	UNREG GND
2	UNREG GND
3	UNREG +17V
4	REG +12V
5	REG +9V
6	EVER +5V
7	EVER +5V
8	GND(V)
9	GND(S)
10	GND(A)
11	POWER ON/OFF

D POWER-UNIT C.B

Y/CHROMA SECTION

CON 802

PIN 201

1	Y PB (X)
2	Y PB (Y)
3	C PB (X)
4	C PB (Y)
5	EVER +5V
6	GND
7	RF SWP
8	PAL/MESEC
9	C PB
10	EVER +5V
11	GND
12	BGP

AUTO SECTION

CON307

1	AUDIO (Y)
2	AUDIO (X)
3	CTL (-)
4	CTL (+)

CONN ASSY, 7P HS-2

CON201

1	Y PB (X)
2	Y PB (Y)
3	C PB (X)
4	C PB (Y)
5	EVER +5V
6	GND
7	RF SWP
8	PAL/MESEC
9	C PB
10	EVER +5V
11	GND
12	BGP

PIN 801

CON101

1	CH-1 (F)
2	CH-1 (S)
3	CH-1 (GND)
4	CH-2 (GND)
5	CH-2 (S)
6	CH-2 (F)

C HEAD C.B

BOARD TO BOARD CONNECTOR

CONN ASSY, 6P CA HEAD

L ACE HEAD C.B

AUDIO (Y)	6
AUDIO (X)	5
N.C.	4
N.C.	3
CTL (-)	2
CTL (+)	1

ACE HEAD

J RELAY C.B-4

PIN101

CH-1 (F)	1
CH-1 (S)	2
CH-1 (GND)	3
CH-2 (GND)	4
CH-2 (S)	5
CH-2 (F)	6

VIDEO HEAD

2. CLEANING

1. CLEANING OF "VIDEO HEAD" (See Figure - 1)

Head cleaning by using a chamois skin.

- Procedure -

1) Remove the "Cabinet, Steel "
2) Put on a glove (thin type) to avoid touching the "Upper drum" and "Lower drum" with bare hand.
3) Put a few drops of alcohol on the Chamois skin, and by slightly placing it against the "Head lip", allow the "Upper drum" to turn the right and left.

- Remark -

1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
2) Wait for the cleaned part to dry out, before operating the unit.
3) Do not reuse the Stained chamois skin.

2. CLEANING OF "ACE HEAD" (See Figure - 2)

Head cleaning by using a chamois skin.

- Procedure -

1) Remove the "Cabinet, Steel ".
2) Put a few drops of alcohol on the chamois skin, clean up the "Audio control head", being careful not to damage the "Upper drum" and other tape running parts.

- Remark -

1) Avoid cleaning "ACE Head" vertically.
2) Wait for the cleaned part to dry well, before operating the unit.

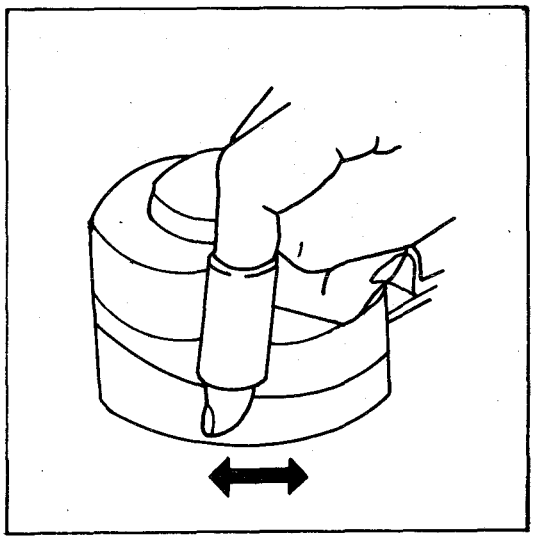


Fig - 1

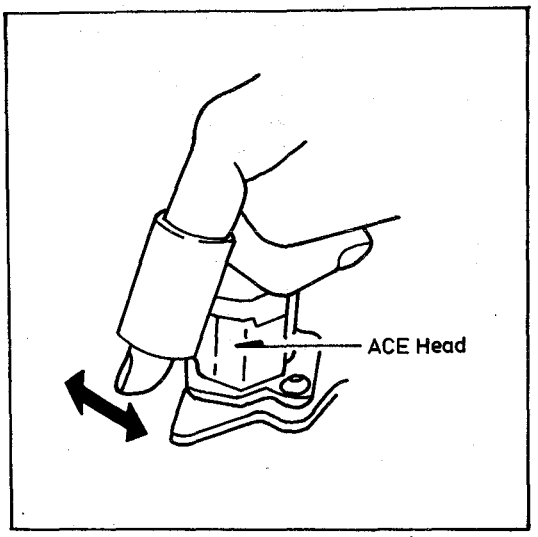


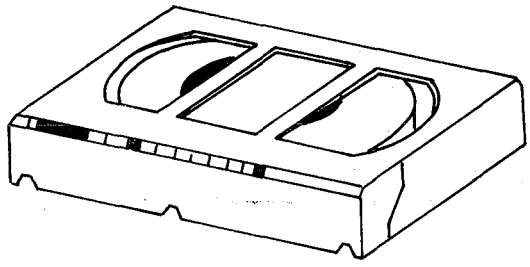
Fig - 2

1. SERVICE JIG AND TOOLS

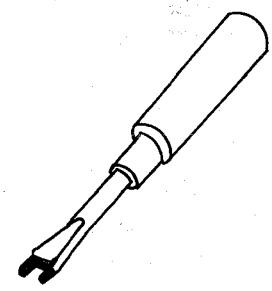
2

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VIIT-063)	Back Tension
J-2	Special Driver (SMALL)	Control Head / Tape Guide Height/
J-3	Special Driver (LARGE)	X Value Adjustment
J-4	Mirror	Tape Transportation Check
J-5	Alignment Tape (TTV-P2)	FM Output Level / Azimuth Adjustment (SP)
J-6	Alignment Tape (TTV-P1)	Audio Output Adjustment (SP)
J-7	Box Driver M3	Guide Pole /A/C Head Height
J-8	EXT. CON. KIT (A) [Parts No. 09-054-013-010]	Tape Pass
J-9	EXT. PCB. KIT (A) [Parts No. 09-054-012-010]	HA(For repair of circuit board)

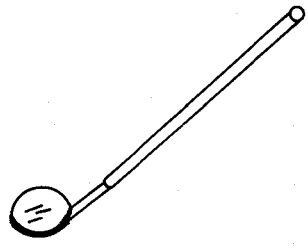
J-1, J-5, J-6



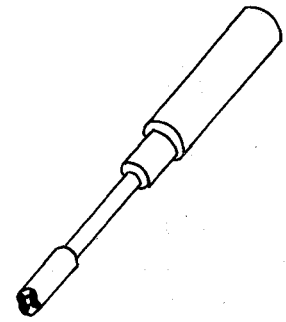
J-2, J-3



J-4



J-7



3. HOW TO USE THE JIGS

1. Using the J-8 (See Figure-1)

2

Use these when the "MAIN C.B" lifted for servicing and adjustment.

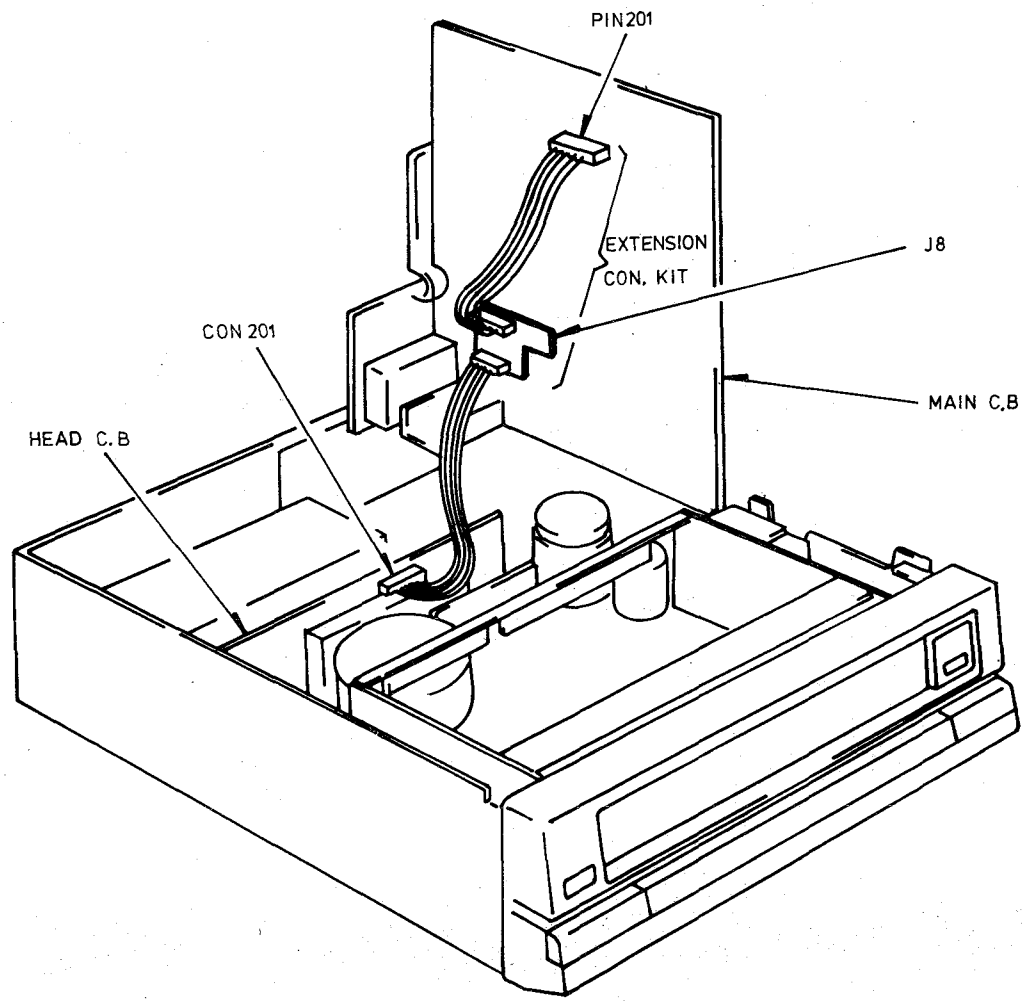


Fig-1

2. Using the J-9 (See Figure-2)

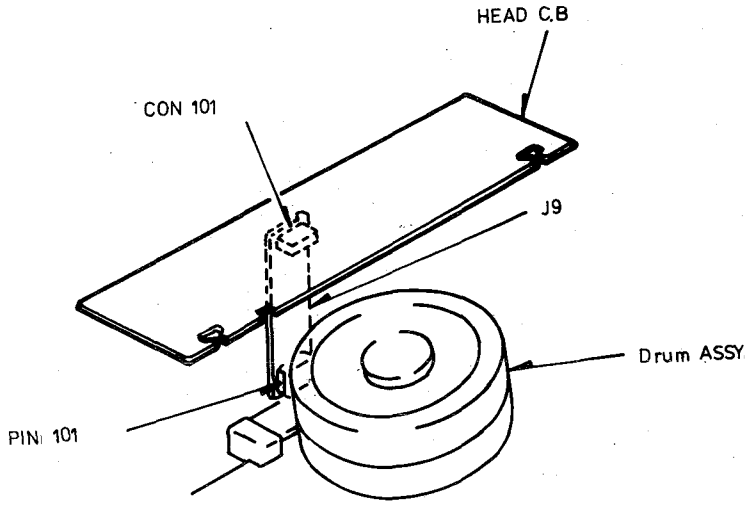
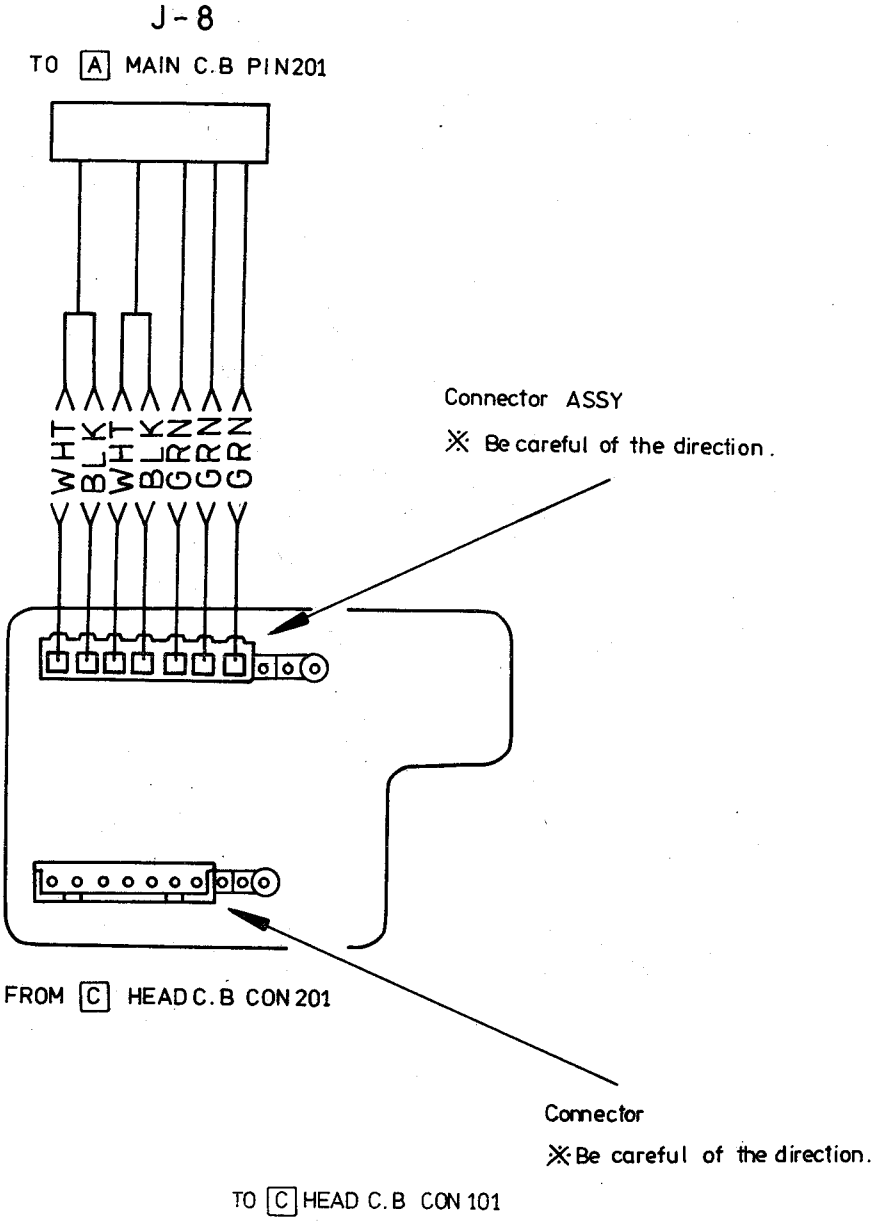


Fig-2

Use this jig when serving the "Head circuit board".

2 HOW TO ASSEMBLE THE JIGS

1 Assembling the J-8 (See Figure-1)



Place the circuit boards as shown in the figure above and assemble the connectors assembly and connectors, taking care of their directions.

Fig-1

2. Assembling the J-9 (See Figure-2)

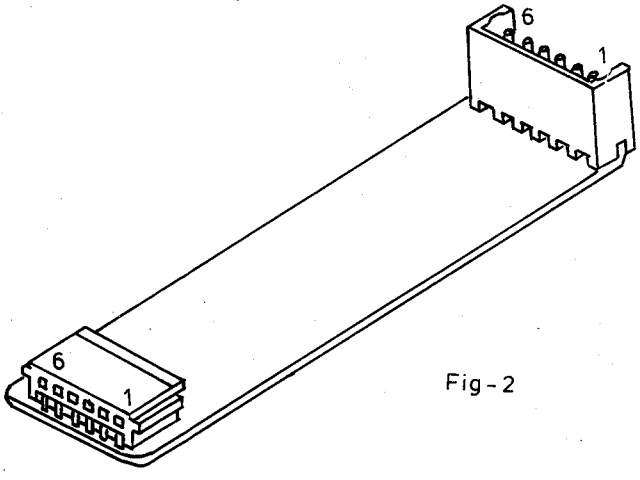


Fig-2

TO [J] RELAY C.B-4 PIN101

Place the circuit board with the solider side down as shown in the figure above and assemble the connectors, taking care of their directions.

4. "FRONT LOADING ASSY" REMOVAL (See Figure 4)

1) Remove "Main belt".
2) Remove 4 screws (A).
3) Release the hooks on both sides and remove the "Front loading ASSY". (Since it is difficult to release these hooks, hold the front of the "Front loading ASSY" and shake it up and down to release them.)

5. "CASSETTE LOAD BRACKET ASSY" REMOVAL (See Figure-4)

1) Remove 1 screw (B).
2) Take off the "Cassette load bracket ASSY".

3

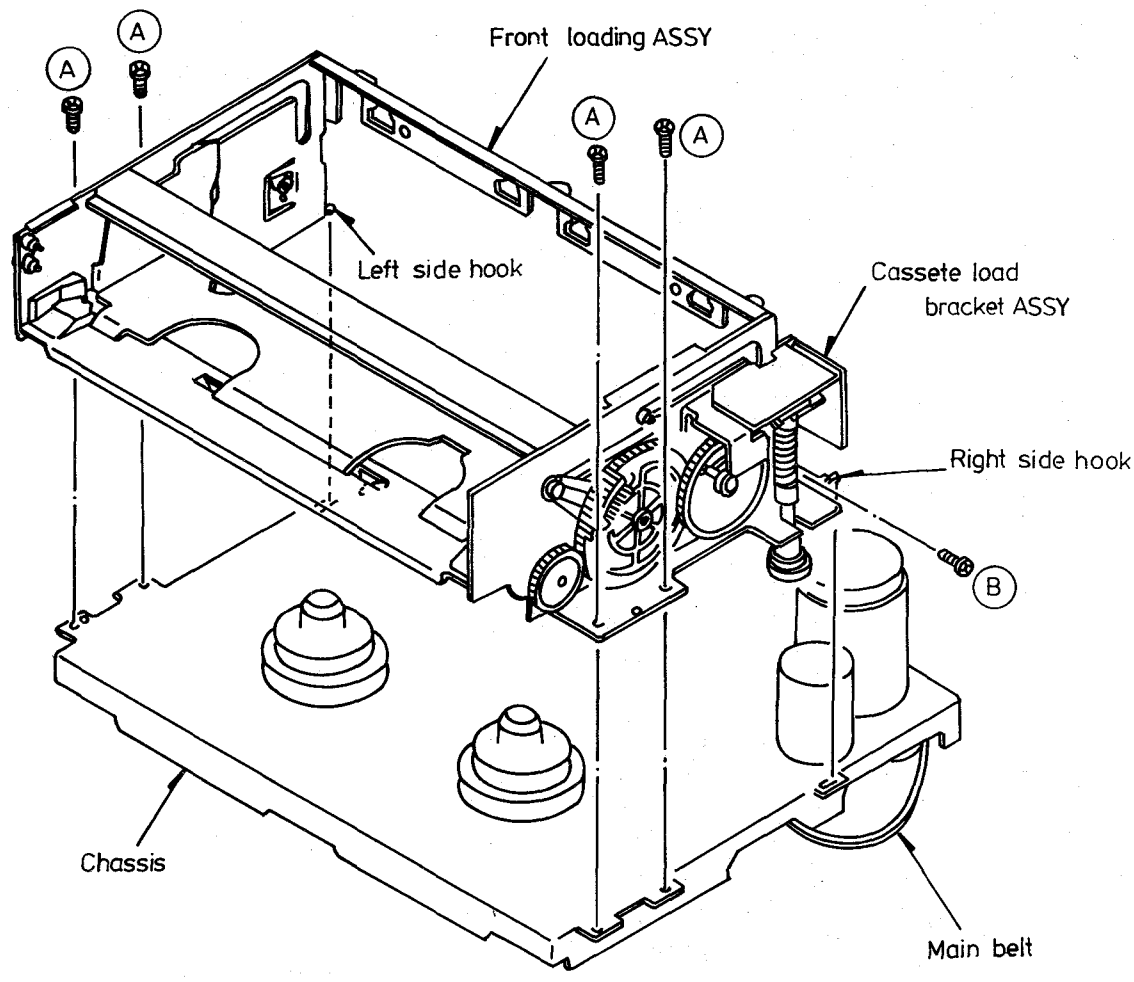


Fig. 4

DISASSEMBLY

1. "CABINET, STEEL" AND "CABINET FRONT ASSY" REMOVAL (See Figure-1)
   1) Remove 4 screws and the "Cabinet, steel".
   2) Release 5 hooks and remove the "Cabinet front ASSY".

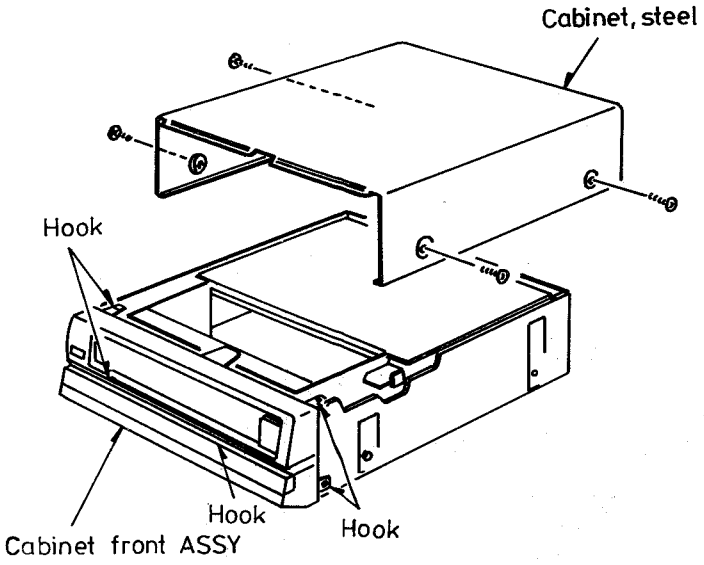


Fig. 1

2. "MAIN CIRCUIT BOARD" REMOVAL (See Figure-2)
   1) Remove 5 screws and the "Main C.B".

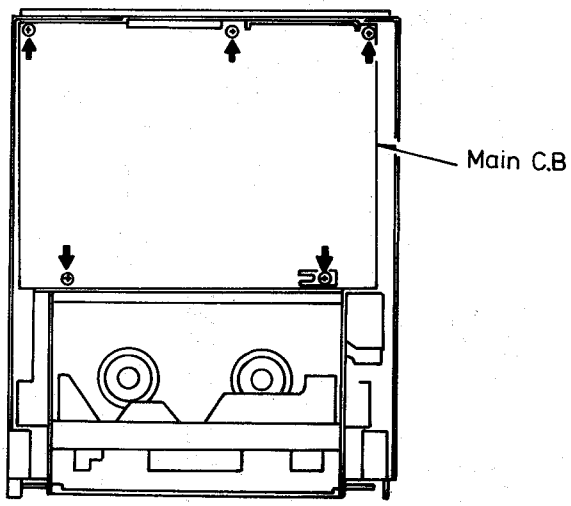


Fig. 2

3. "MECHANISM ASSY" REMOVAL (See Figure-3)
   1) Remove 1 screw (A) and the "Head C.B".
   2) Remove 3 screws (B) and the "Mechanism ASSY".

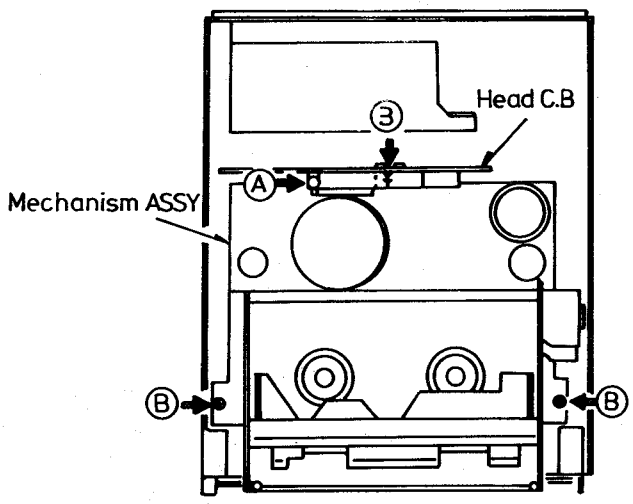


Fig. 3

9. "BT BAND ASSY" and "BT ARM SEMI ASSY" REMOVAL (See Figure 8)

1) Remove the "Front loading ASSY".
2) Remove Poly-Washer (A) and "BT actuate plate spring" from the "BT arm semi ASSY".
3) Remove 1 screw (B) and "Band holder spring".
4) Take off the "BT band ASSY" from the "BT arm semi ASSY".

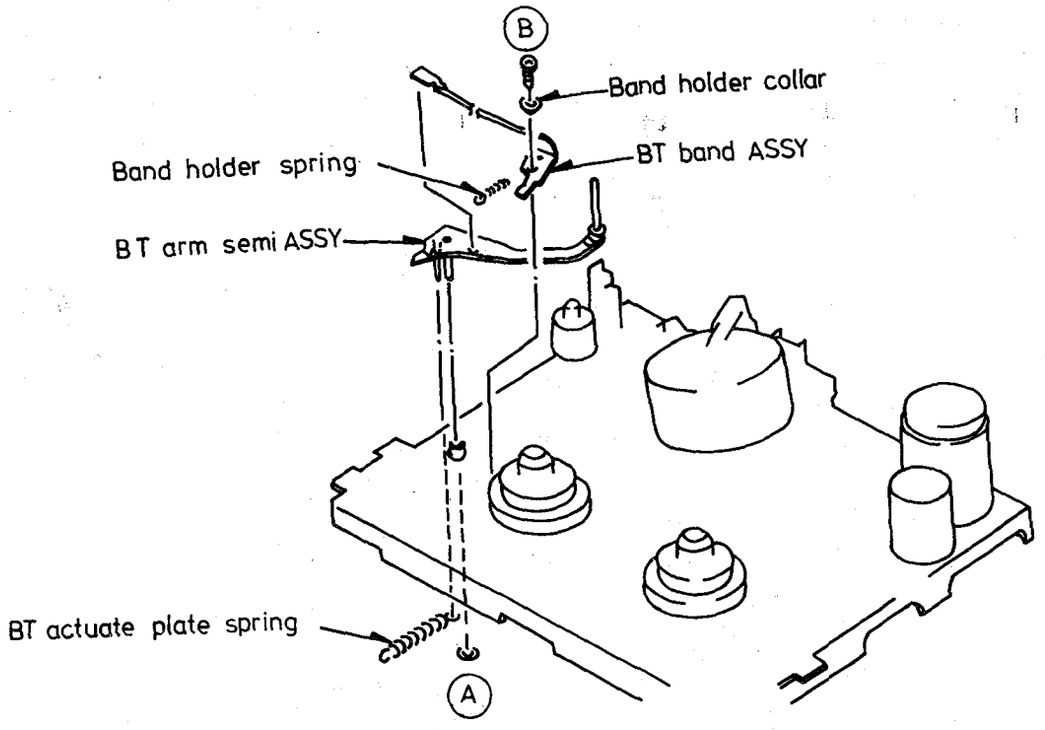


Fig. 8

10. "REEL ASSY" REMOVAL (See Figure-9)

1) Remove the "Front loading ASSY", "Gear holder ASSY" and "BT band ASSY".
2) Remove 1 screw (A) and the "Back tension support".
3) Remove the 2 "Reel ASSY".

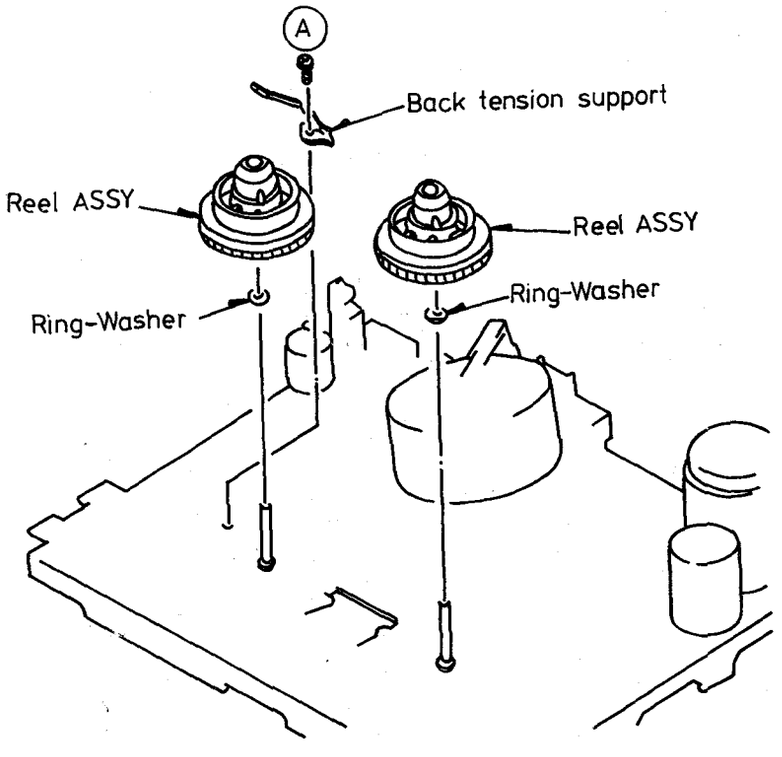


Fig. 9

8. "GEAR HOLDER ASSY" REMOVAL (See Figure-7)
   1) Remove the "Front loading ASSY".
   2) Remove "Drive belt".
   3) Remove Poly-Washer and "Middle pulley ASSY".
   4) Remove Nylon-Washer (A) and take off the "Clutch ASSY".
   5) Remove 1 screw (B) and 2 screws (C) and take off the "Gear holder ASSY".
   6) Remove 1 screw (D) and take off the "T-spring soft brake arm".
   7) Take off the "T soft brake ASSY".
   8) Remove 2 "E-Rings (E)" and take off the 2 "Reel drive gear".

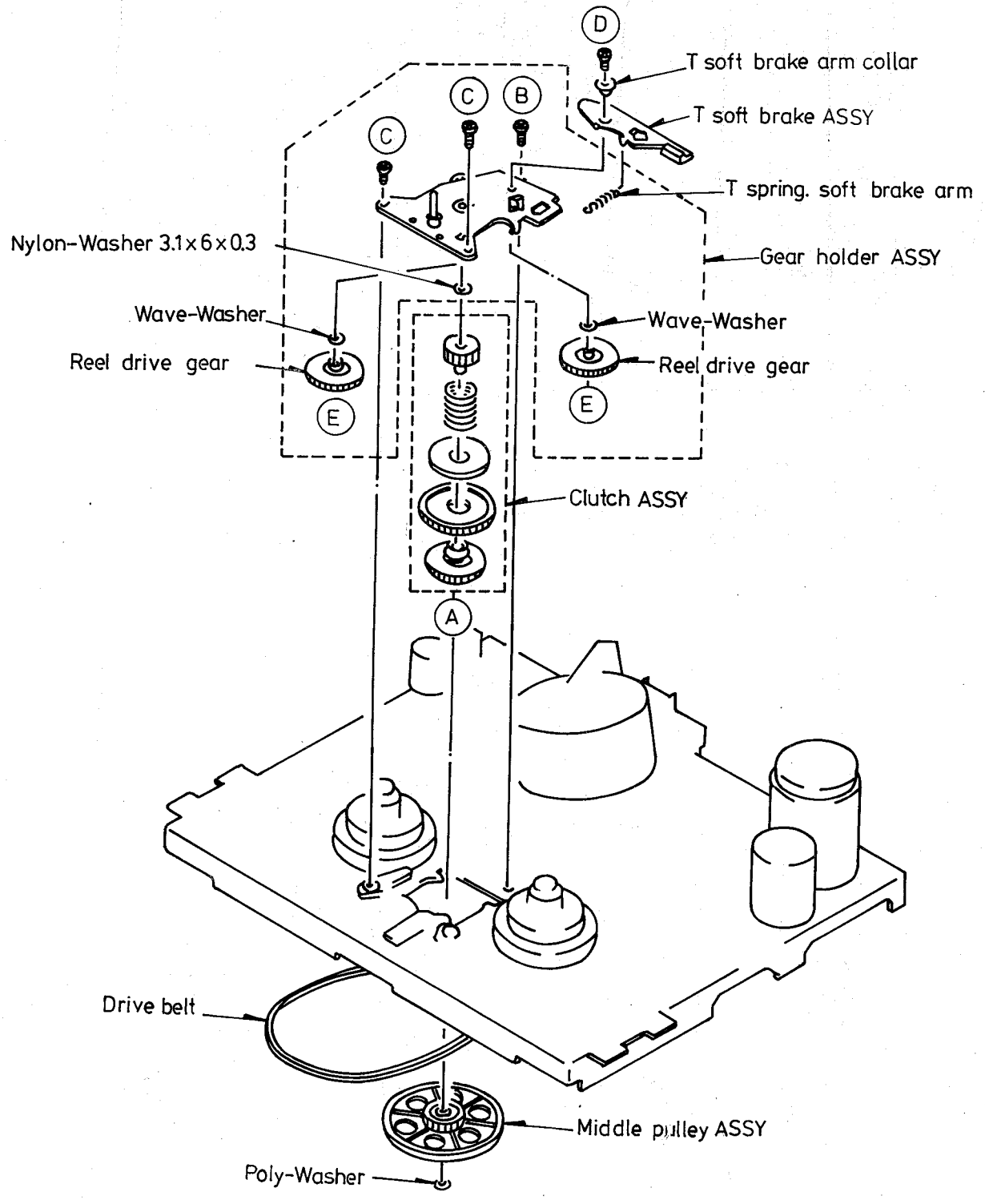


Fig. 7

17. "REEL SENSOR" REMOVAL (See Figure-16)

1) Remove "Front loading ASSY" and the "Gear holder ASSY".
2) Remove "Reel ASSY".
3) Remove "Reel sensor".

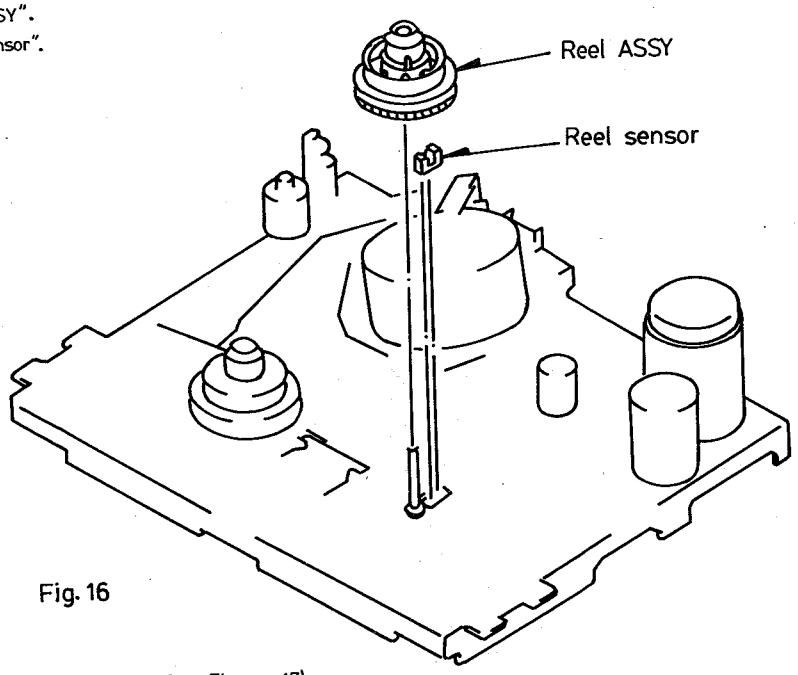


Fig. 16

18. "LOADING BASE ASSY" REMOVAL (See Figure-17)

1) Remove "Cylinder ASSY", "BT arm semi ASSY", "BT band ASSY" and "Front loading ASSY".
2) Remove 1 screw Ⓐ and "L gear plate collar", "L gear plate".
3) Remove 2 screws Ⓑ
4) Take off the "Loading base semi ASSY".

≡Remark≡

When instaling the "L gear plate", align markings Ⓒ on the "T loading gear L" and "L gear plate".

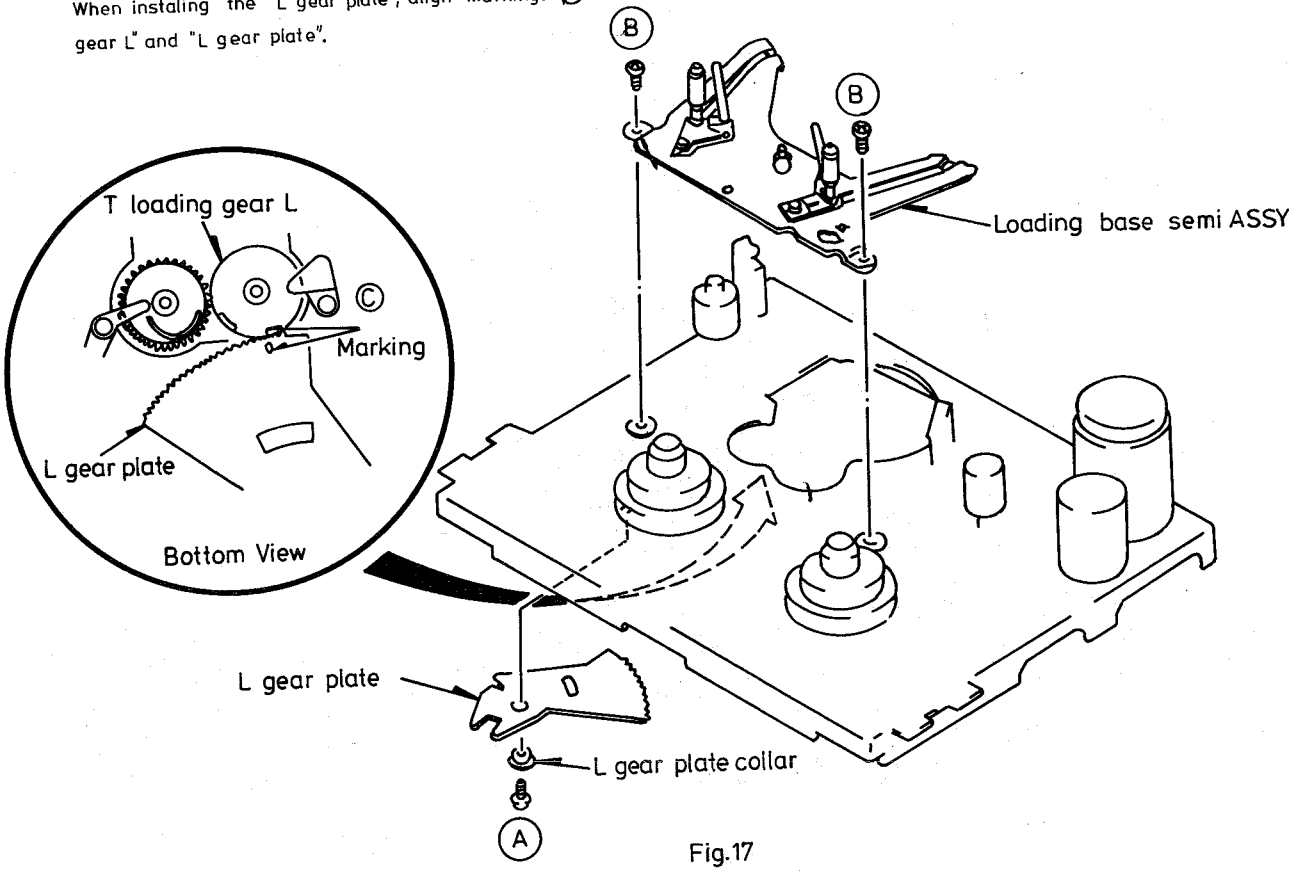


Fig.17

16. "FLYWHEEL CAPSTAN" REMOVAL (See Figure-15)

1) Remove the Nylon-Washer (A)
2) Take off the "Drive belt" and "Main belt".
3) Remove 2 screws (B) and take off the "FL angle ASSY".
4) Take off the "Flywheel capstan".

≡Remark≡

Do not miss the Poly-Washer (C) when pulling out the "Flywheel capstan".

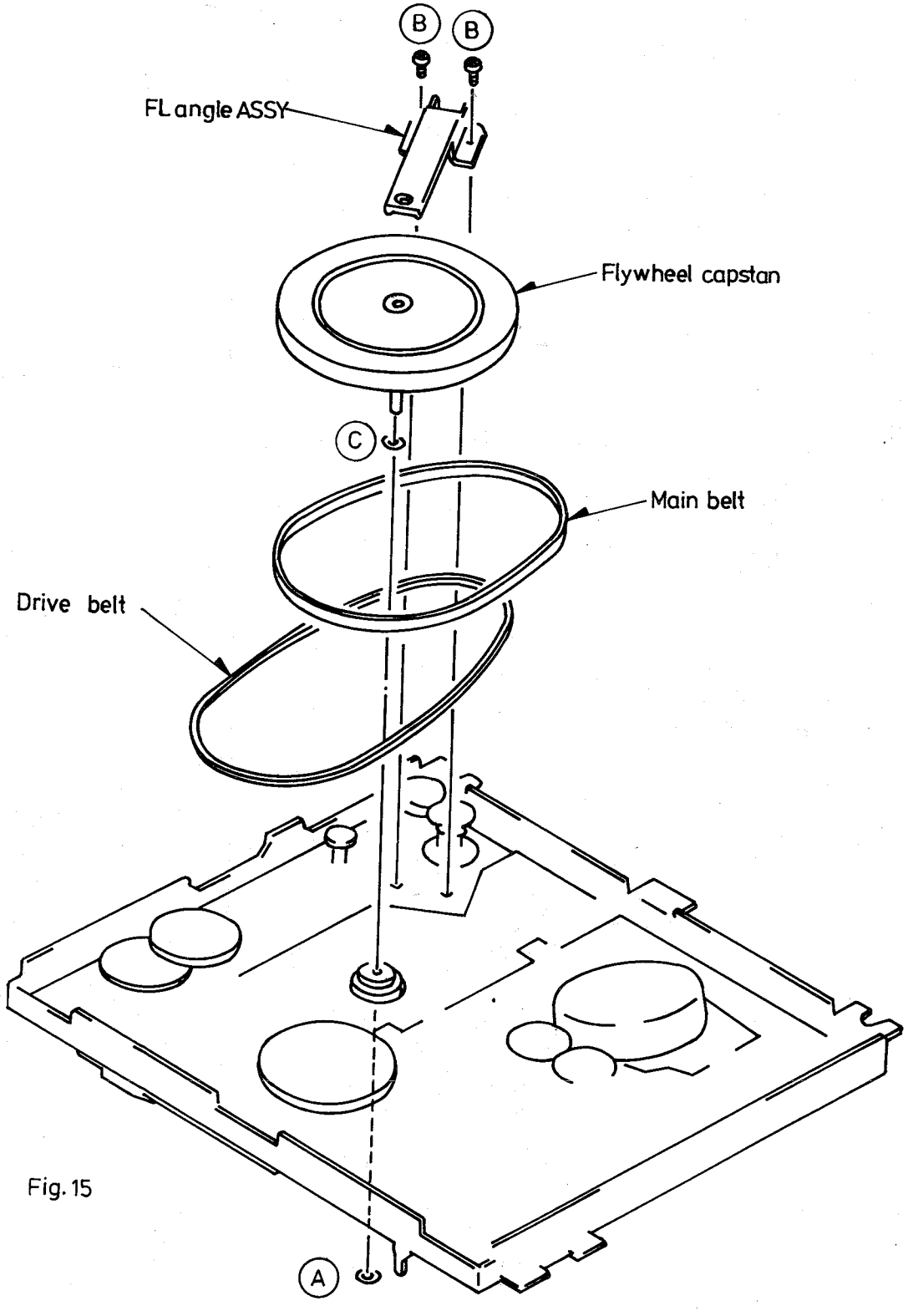


Fig. 15

15. "LOADING GEAR" AND "LOADING CAM ASSY" REMOVAL (See Figure – 14)

1) Take off the "Loading belt" from the "Loading pulley".
2) Remove Poly-Washer Ⓐ and take off the "Loading pulley".
3) Remove Poly-Washer Ⓑ and take off the "Loading gear".
4) Remove Poly-Washer Ⓒ and take off the "Eject arm" and the "Brake actuate arm".
5) Remove 2 screws Ⓓ and take off the "Loading lever reinforce plate" and the "Loading lever ASSY".
6) Take off the "Loading cam ASSY".

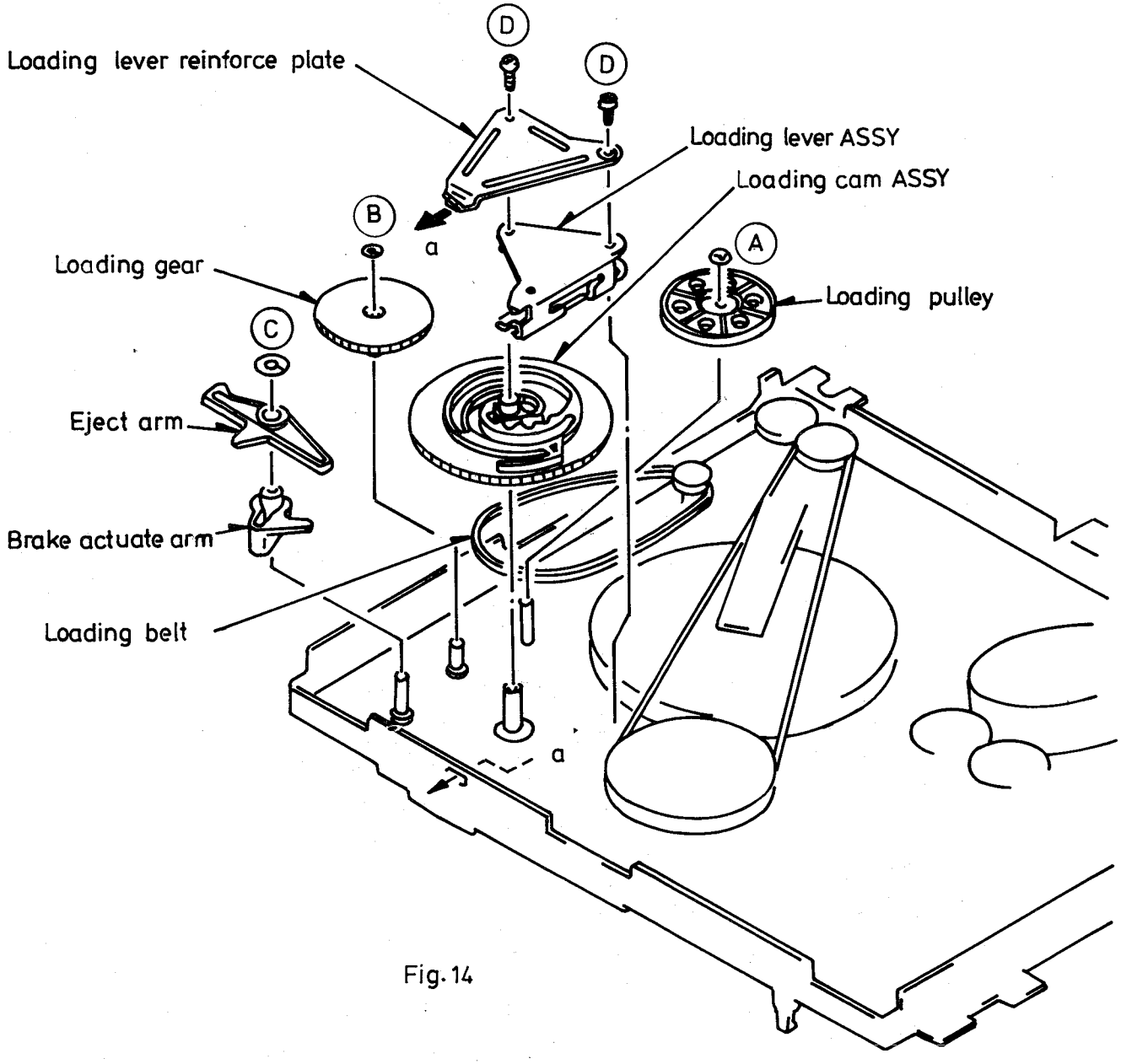


Fig. 14

13. "CYLINDER MOTOR" REMOVAL (See Figure-12)

1) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
2) Remove 2 screws (A) and take off the "Cylinder motor TM82".
3) Remove 3 screws (B) and take off the "Cylinder motor TM82".

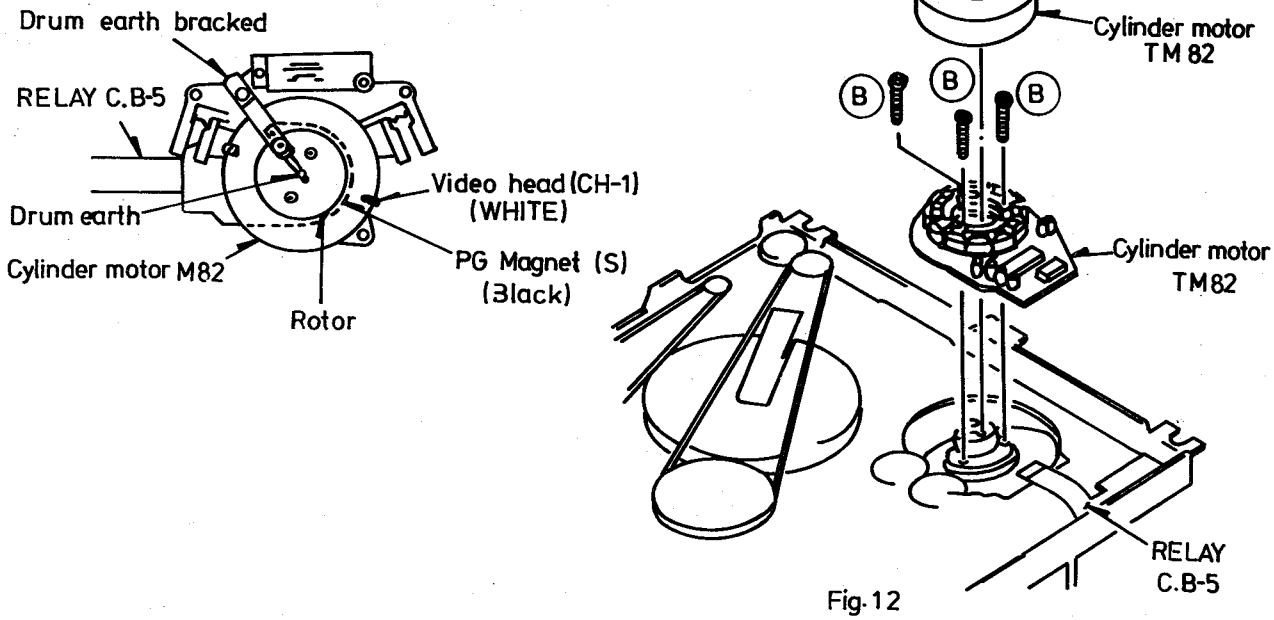


Fig. 12

14. "CAPSTAN MOTOR ASSY" AND "LOADING MOTOR ASSY" REMOVAL (See Figure-13)

1. "Capstan motor ASSY" Removal
   1) Take off the "Drive belt" and "Main belt".
   2) Remove 2 screws (A) and take off the "Capstan motor ASSY".
2. "LOADING MOTOR ASSY" Removal
   1) Take off the "FL belt".
   2) Remove 2 screws (B) and take off the "Loading motor ASSY".

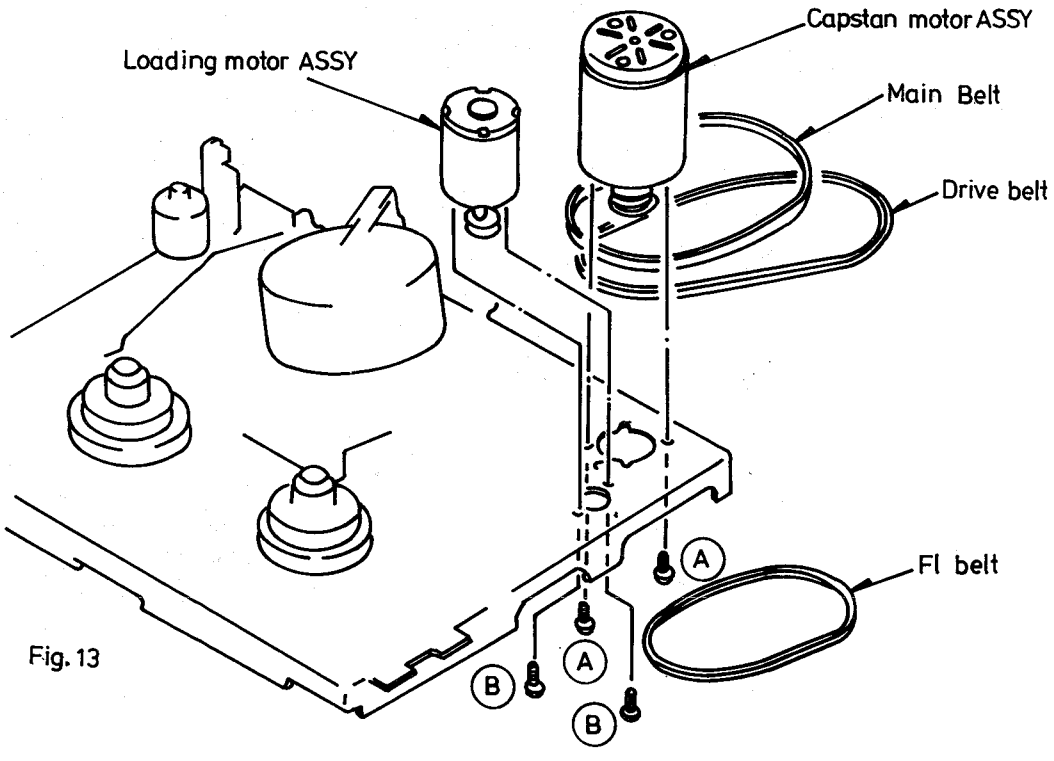


Fig. 13

11. "CYLINDER ASSY" REMOVAL (See Figure-10)

1) Remove the "Front loading ASSY".
2) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
3) Remove 1 screw (A) and take off the "Drum earth".
4) Remove 3 screws (B) and take off the "Cylinder ASSY".

≡Remarks≡

Take off the "Cylinder ASSY" carefully without any damage.

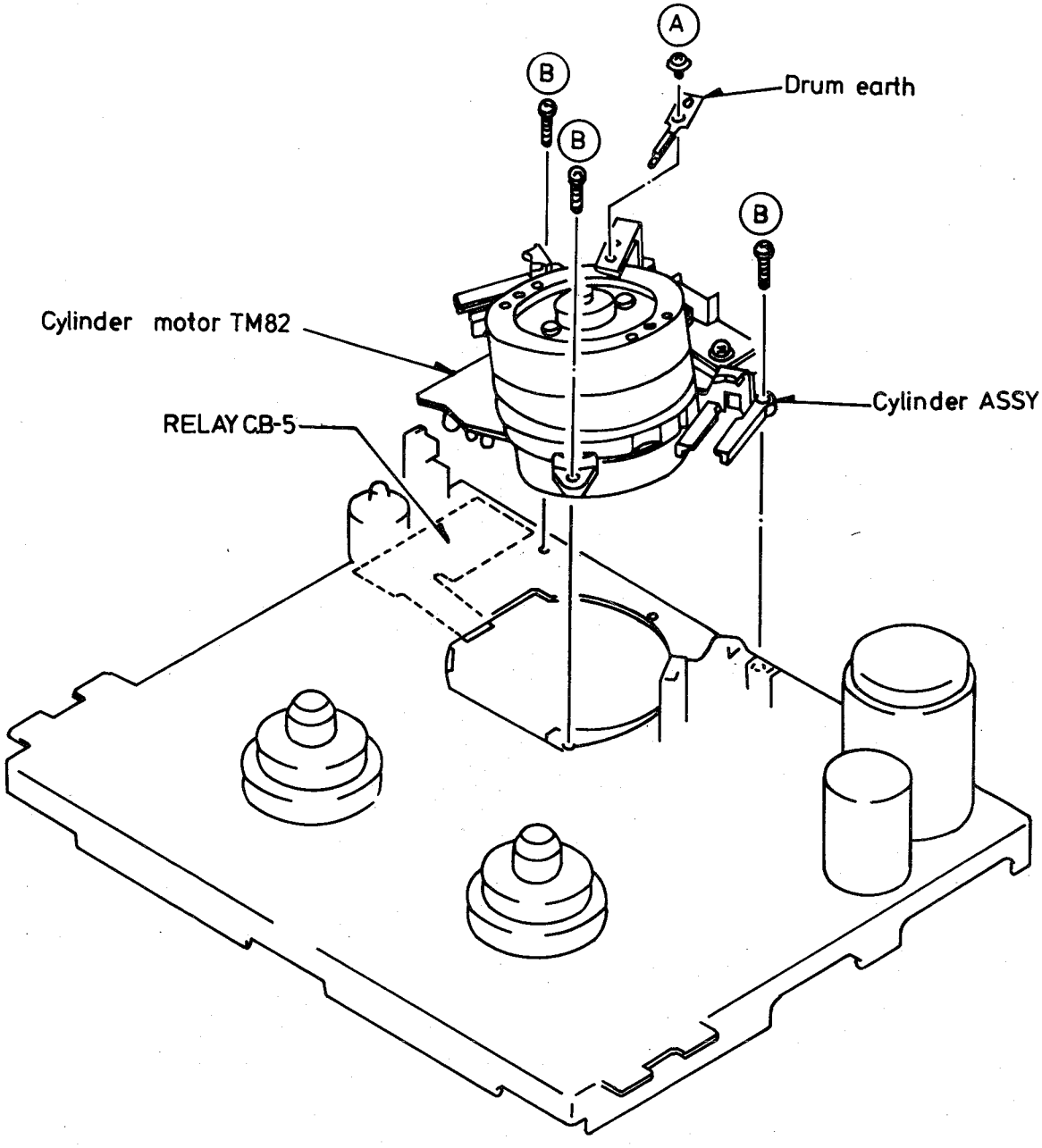


Fig. 10

12. "UPPER DRUM" REMOVAL (See Figure-11)

1) Remove the "Front loading ASSY".
2) Remove 1 screw Ⓐ and take off the "Drum earth bracket".
3) Remove 2 screws Ⓑ and take off the "Upper drum".

≡Remark≡

1) Use gloves and do not touch the drum surface with bare fingers.
2) If the Video head is defective replace the complete „Upper drum" with the Head.

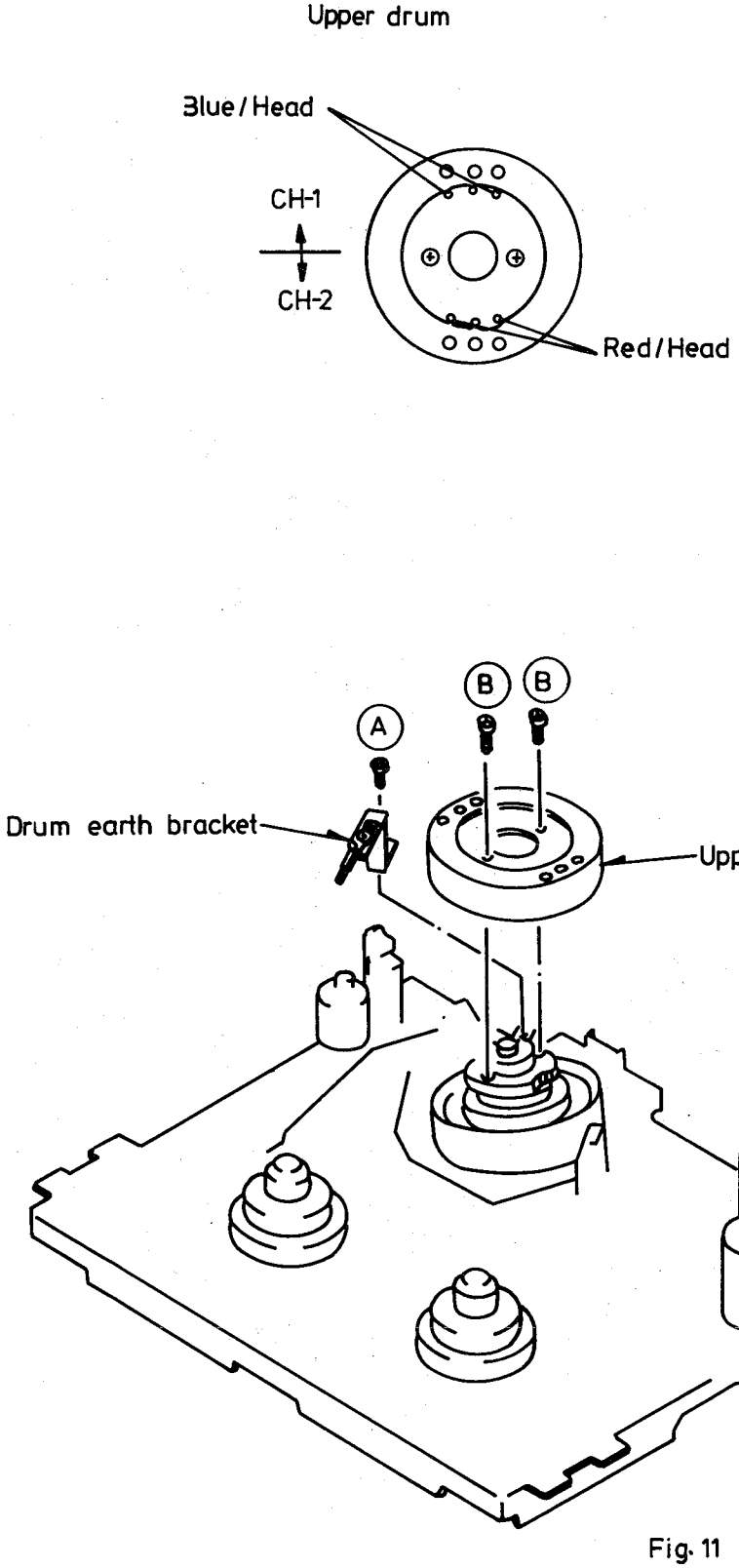
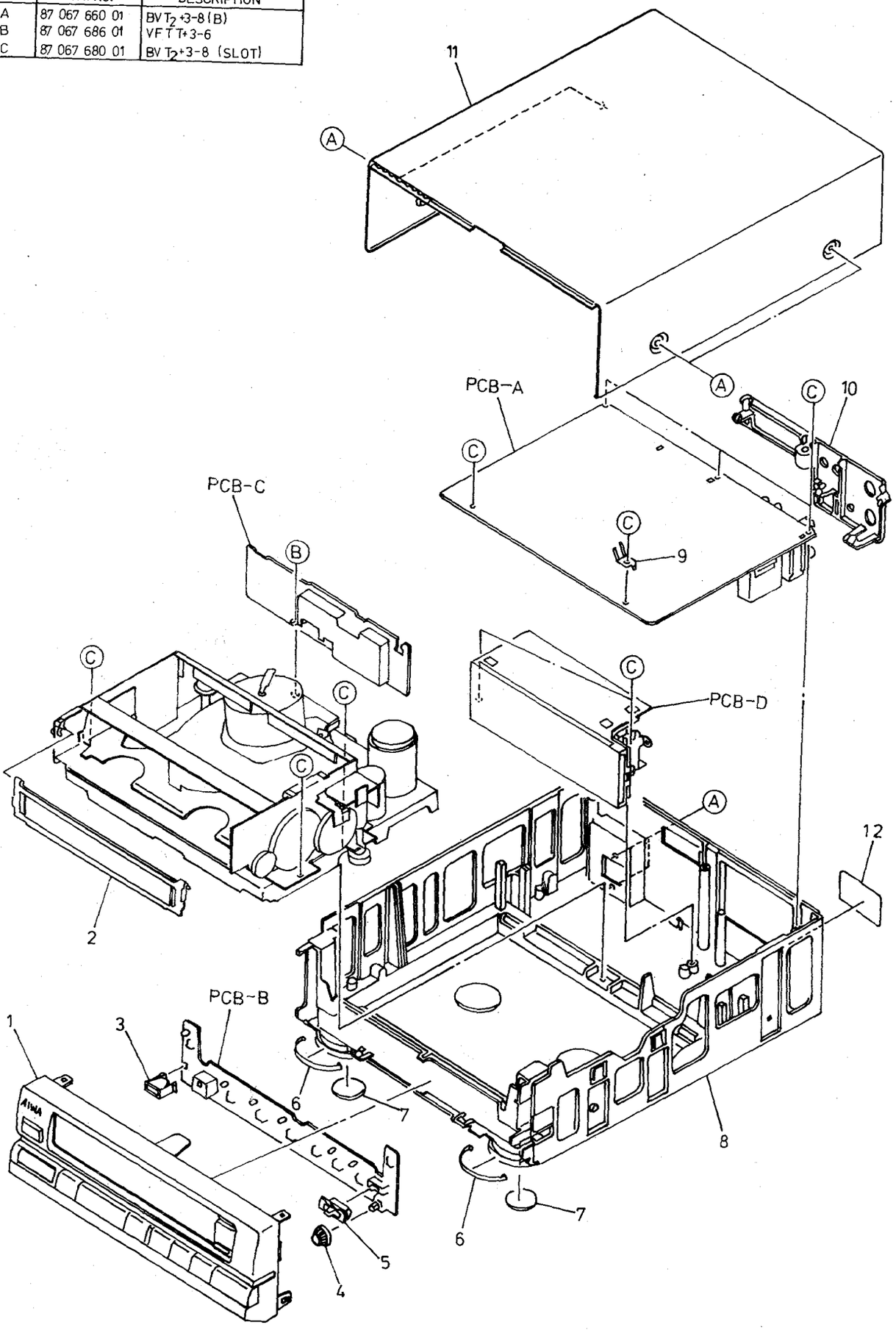


Fig. 11

EXPLODED VIEW – 1

REF.NO.	PART. NO.	DESCRIPTION
A	87 067 660 01	BV T_2 +3-8 (B)
B	87 067 686 01	VF T T+3-6
C	87 067 680 01	BV T_2+3-8 (SLOT)



19 "WORMWHEEL ASSY" REMOVAL (See Figure-18)

1. Disassembly
   1) Remove "Front loading ASSY".
   2) Remove "Cassette load bracket ASSY".
   3) Remove E-Ring Ⓐ
   4) Remove Wormwheel ASSY ("Wormwheel","Friction spring","Friction gear")
2. Assmbly
   1) Turn the "Lift gear R" fully counterclockwise.
   2) Restore "Wormwheel ASSY" to the stud.

≡Remark≡

Match "Lift gear R" to the "Wormwheel hole" as illustrated.

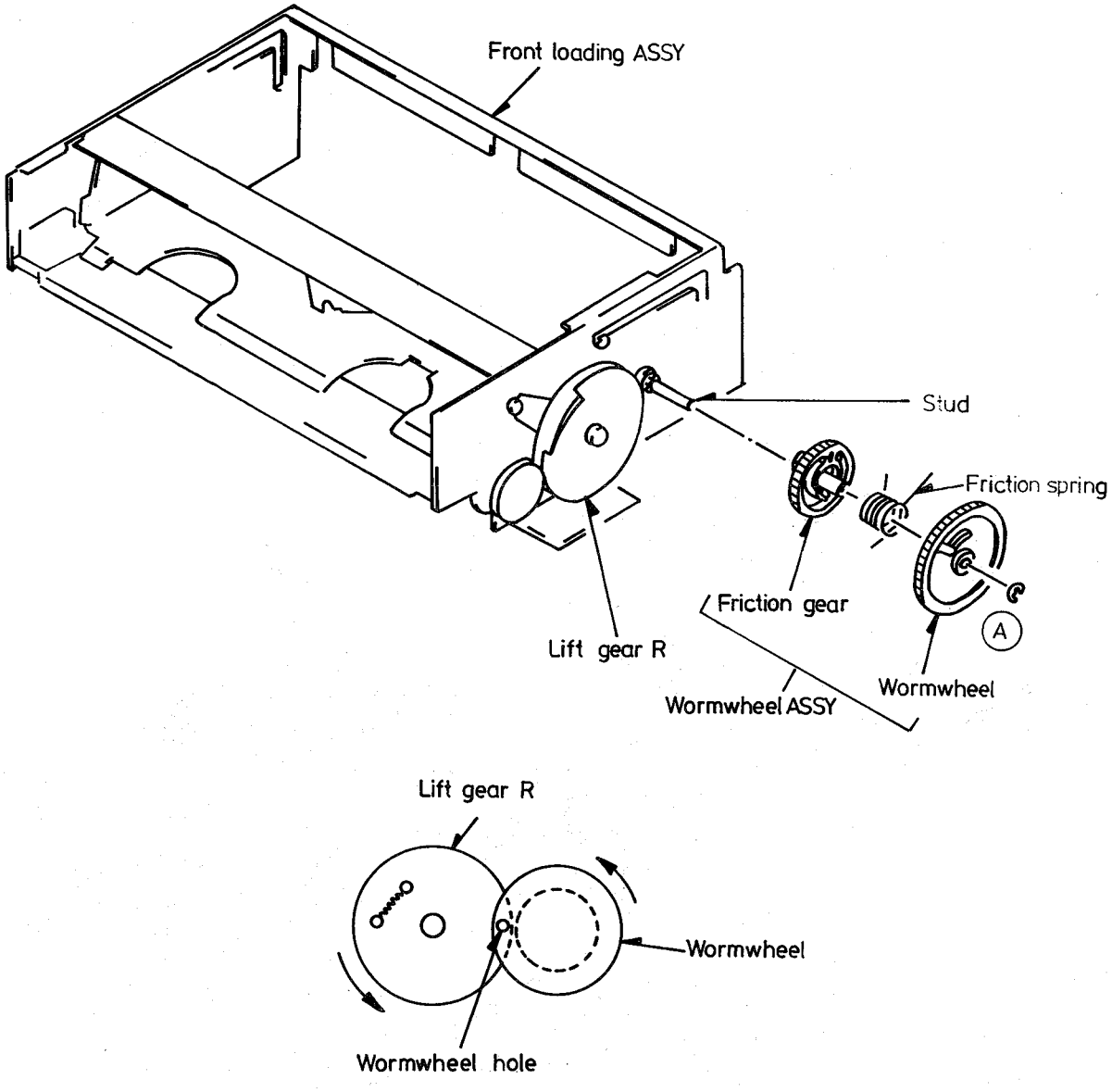
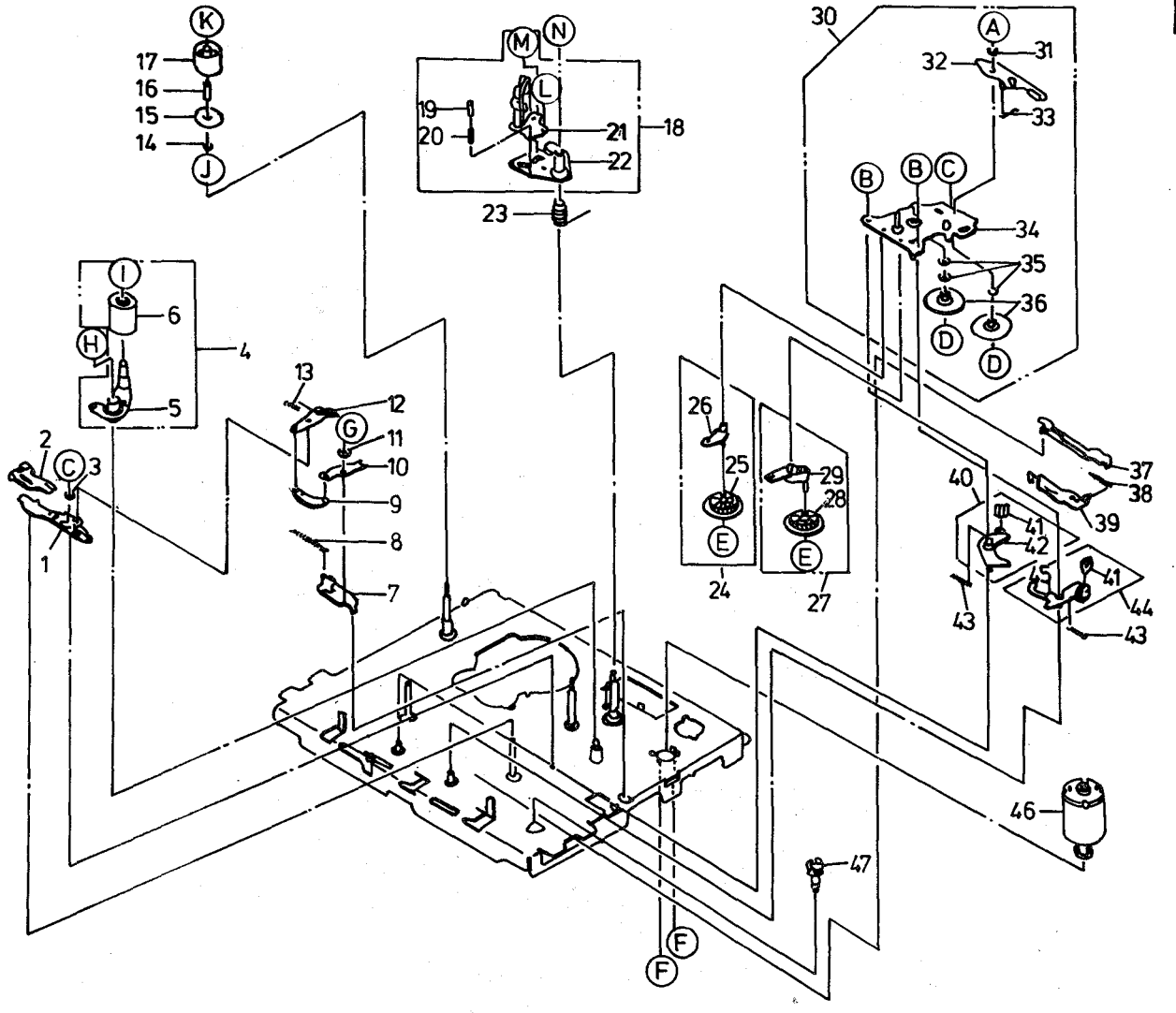


Fig. 18

4-36	*S8-059-090-060	REEL DRIVE GEAR	2
4-37	*S8-059-100-160	BRAKE LIFTER	1
4-38	*S8-059-100-180	L BRAKE ACTUATOR SPRING	1
4-39	*S8-059-100-170	L BRAKE ACTUATOR	1
4-40	*S8-059-103-010	S BRAKE ARM ASSY	1
4-41	*S8-059-100-190	BRAKE SHOE	2
4-42	*S8-059-100-010	S BRAKE ARM	1
4-43	*S8-059-100-020	BRAKE ARM SPRING	2
4-44	*S8-059-103-020	T BRAKE ARM ASSY	1
4-45	*S8-059-100-030	T BRAKE ARM	1
4-46	S8-059-113-010	LOADING MOTOR ASSY	1
4-47	*S8-059-113-020	TRIGGER BEARING ASSY	1

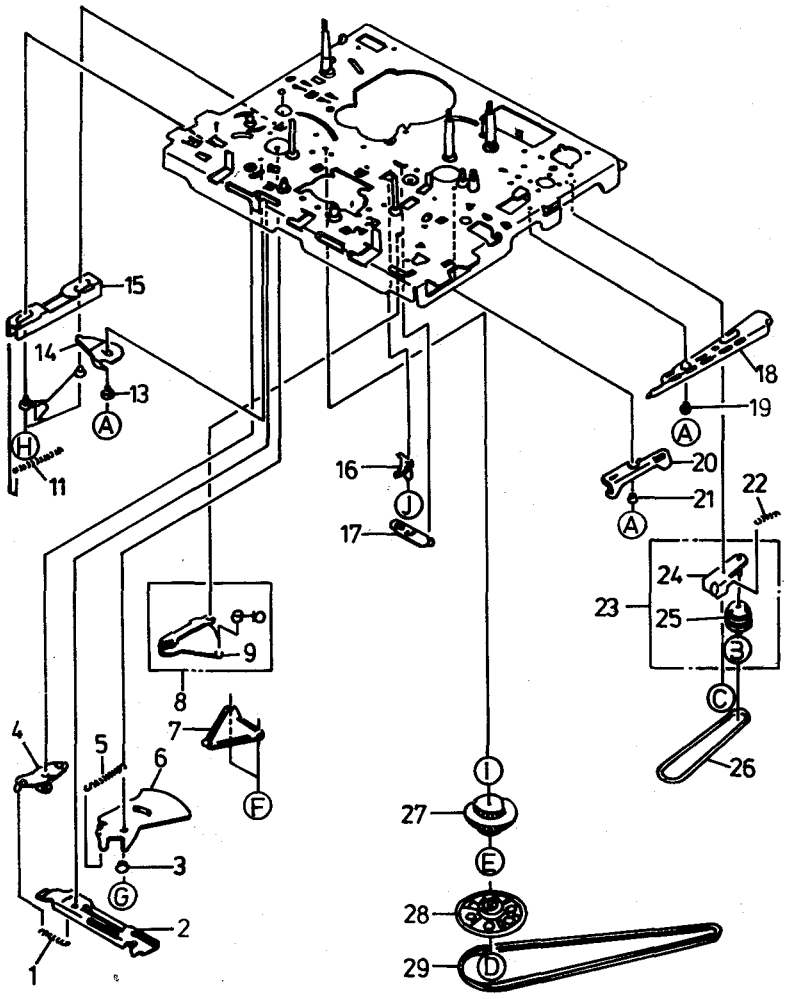
EXPLODED VIEW-4



REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A	S9-974-000-00	SL FH SCREW 2×3	F	S9-105-000-00	C TAPPING SCREW 3×4	K	S9-953-000-00	NYLON NUT M3
B	S9-097-000-00	TAMS SCREW 2×4	G	S9-096-000-00	TAMS SCREW 2.6×4	L	S9-999-000-25	SCREW 3.6 (SHAPE TYPE)
C	S9-192-000-00	C TAPPING SCREW 2.6×5	H	S9-999-030-00	PW CUT 5×8×0.5	M	S9-705-000-00	LONG LOCK SCREW 26×7
D	S9-500-000-00	E RING S1.5	I	S9-038-000-00	SCREW 2.6×4	N	S9-953-000-00	NYLON NUT M3
E	S9-743-000-00	PW CUT 1.6×3.8×0.3	J	S9-387-000-00	PLANE WASHER 3×8×0.5			

EXPLODED VIEW – 5

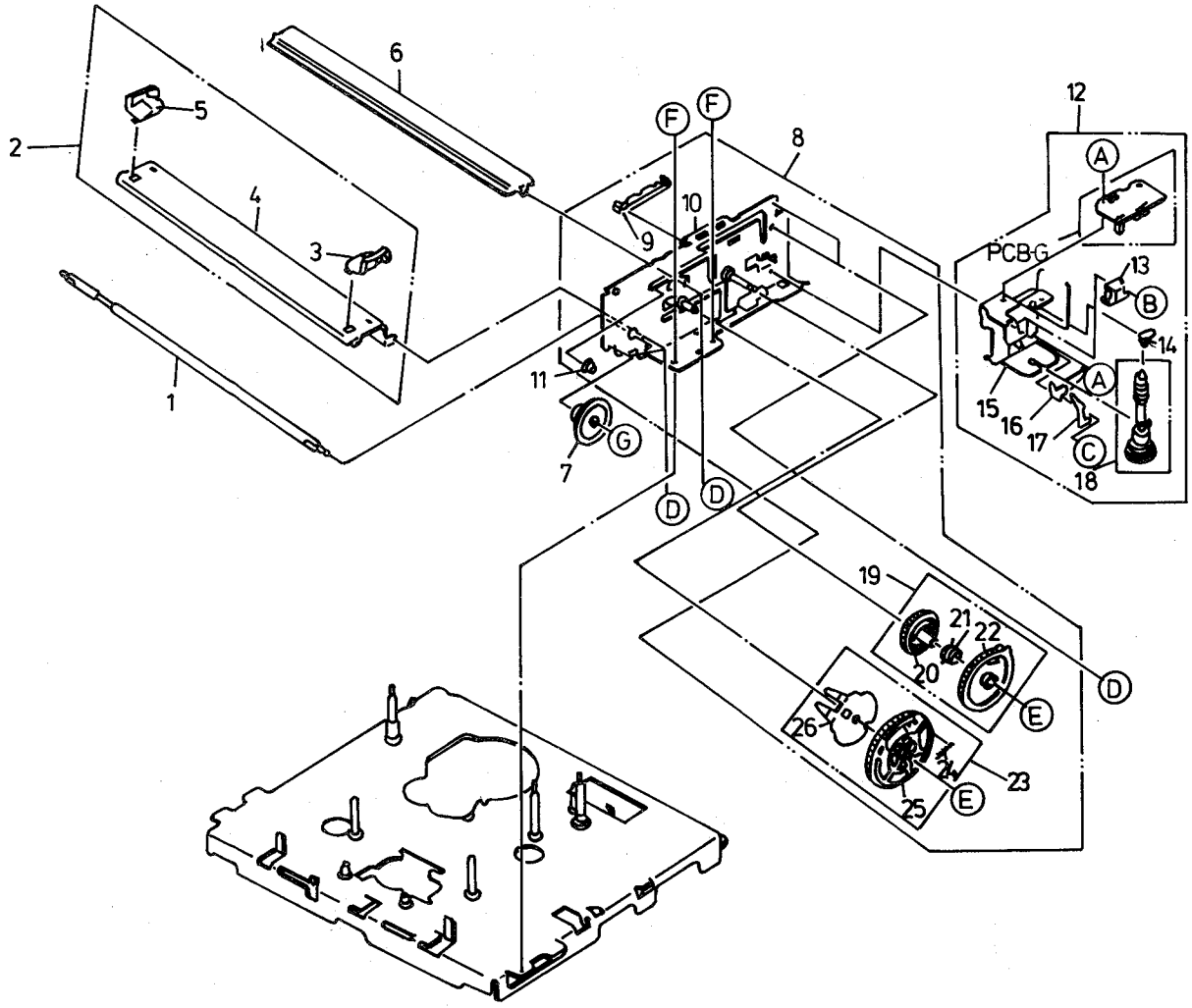
REF. NO.	PART. NO.	DESCRIPTION	REF. NO.	PART. NO.	DESCRIPTION	REF NO	PART NO	DESCRIPTION
A	S9-192-000-00	C TAPPING SCREW 2.6 x 5	E	S9-999-060-04	NYLON WASHER 2.98×6×0.3	I	S9-853-000-00	NYLON WASHER 3.1× 6×0.3
B	S9-743-000-00	PW CUT 1.6 x 3.8× 0.5	F	S9-078-000-00	TAMS SCREW 2 × 5	J	S9-876-000-00	PW CUT 2.1× 5 × 0.5
C	S9-876-000-00	PW CUT 2.1 x 6 × 0.5	G	S9-203-000-00	C TAPPING SCREW 3 × 6			
D	S9-884-000-00	PW CUT 2.6 x 6× 0.5	H	S9-840-000-00	S TAPPING SCREW 2.6× 3.5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	5-1	*S8-059-120-050	LOADING ACTUATOR SPRING		1
	5-2	*S8-059-125-030	LOADING ACTUATOR SEMI ASSY		1
	5-3	*S8-059-120-100	L GEAR PLATE COLLAR		1
	5-4	*S8-059-125-020	LOADING ACTUATE LEVER SEMI ASSY		1
	5-5	*S8-059-120-120	L GEAR PLATE SPRING		1
	5-6	*S8-059-120-090	L GEAR PLATE		1
	5-7	*S8-059-120-110	LOADING LEVER REINFORCE PLATE		1
	5-8	*S8-059-123-010	LOADING LEVER ASSY		1
	5-9	---	LOADING LEVER SEMI ASSY		1
	5-10	---	CAM ROLLER		1
	5-11	*S8-059-080-130	BACK TENSION SPRING		1
	5-12	*S8-059-080-210	BT ACTUATE PLATE COLLAR		2
	5-13	*S8-059-060-180	COLLAR		1
	5-14	*S8-059-080-180	BT ACTUATE LEVER		1
	5-15	*S8-059-080-190	BT ACTUATE PLATE		1
	5-16	*S8-059-170-010	RG ACTUATE ARM		1
	5-17	*S8-059-170-020	ORG ACTUATE		1
	5-18	*S8-059-150-070	L BRAKE PLATE		1
	5-19	*S8-059-060-180	COLLAR		1
	5-20	*S8-059-150-080	EJECT ACTUATOR		1
	5-21	*S8-059-060-180	COLLAR		1
	5-22	*S8-059-150-110	IDLER ARM SPRING		1
	5-23	*S8-059-153-030	E IDLER ARM ASSY		1
	5-24	---	E IDLER ARM SEMI ASSY		1
	5-25	---	EJECT PULLEY		1
	5-26	S8-059-150-060	FL BELT		1
	5-27	*S8-059-093-020	CLUTCH ASSY		1
	5-28	*S8-059-093-010	MIDDLE PULLEY ASSY		1
	5-29	*S8-059-090-170	DRIVE BELT		1

EXPLODED VIEW-7

REF.NO.	PART. NO.	DESCRIPTION	REF. NO.	PART. NO.	DESCRIPTION	REF. NO.	PART. NO.	DESCRIPTION
A	S9-096-000-00	TAMS SCREW 2.6×4	D	S9-096-000-00	TAMS SCREW 2.6×4	G	S9-504-000-00	E RING S2.5
B	S9-078-000-00	TAMS SCREW 2×5	E	S9-504-000-00	E RING S2.5			
C	S9-743-000-00	PW CUT 1.6×3.8×0.3	F	S9-192-000-00	C TRAPPING SCREW 2.6×4			

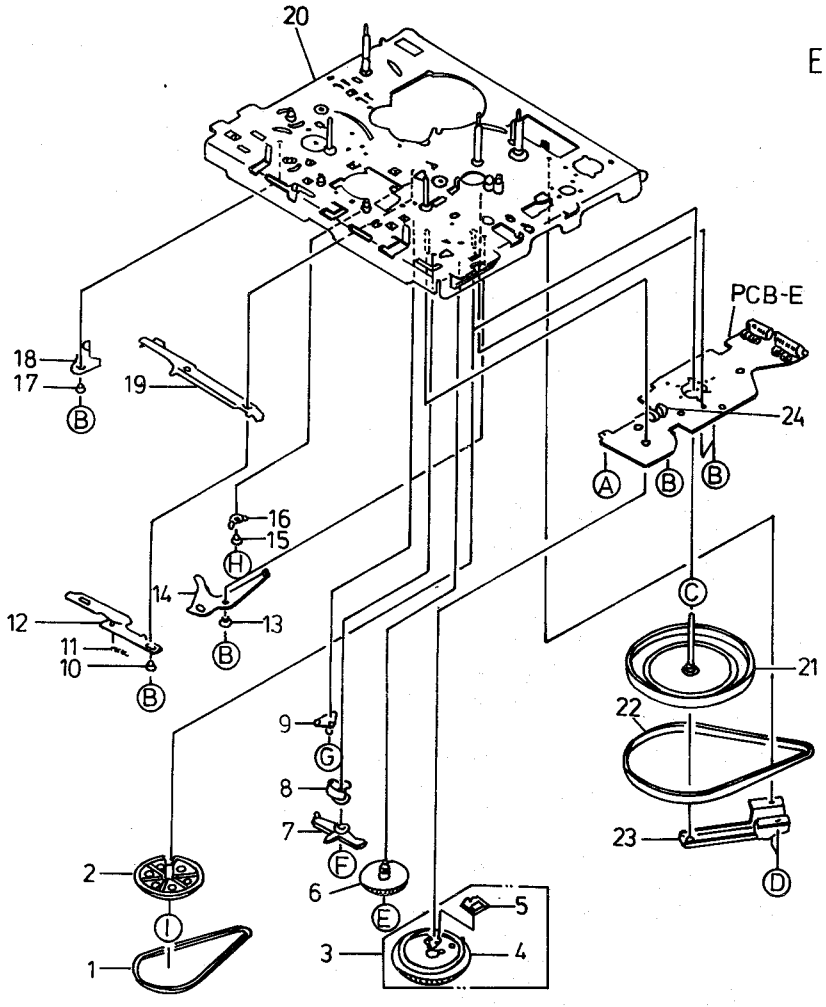


PART. NO. CHANGED TO	REF. NO.	PART. NO.	DESCRIPTION	COMMON MODEL	Q. TY
	7-1	*S8-059-160-600	SYNCHRONIZE SHAFT		1
	7-2	---	FRONT ANGLE ASSY		1
	7-3	*S8-059-160-250	TAPE GUIDE R		1
	7-4	*S8-059-160-180	FRONT ANGLE		1
	7-5	*S8-059-160-240	TAPE GUIDE L		1
	7-6	*S8-000-220-070	UPPER PLATE		1
	7-7	*S8-059-160-170	SYNCHRONIZE GEAR A		2
	7-8	*S8-059-163-220	FRAME R ASSY		1
	7-9	---	OPEN LEVER GUIDE		1
	7-10	---	FRAME R SEMI ASSY		1
	7-11	---	GUIDE SLEEVE		1
	7-12	*S8-059-163-180	C LOAD BRACKET ASSY		1
	7-13	---	SENSOR P.C.B RM ASSY		1
	7-14	---	F WORM BEARING A		1
	7-15	---	C LOAD BRACKET SEMI ASSY		1
	7-16	---	IN SW LEVER		1
	7-17	---	S SW LEVER		1
	7-18	*S8-059-163-190	F LOADING CLUTCH ASSY		1
	7-19	*S8-059-163-210	WORM WHEEL ASSY		1
	7-20	---	FRICTION GEAR		1
	7-21	---	FRICTION SPRING		1
	7-22	---	WORM WHEEL		1
	7-23	*S8-059-163-120	LIFT GEAR R ASSY		1
	7-24	---	LP SPRING		1
	7-25	---	LIFT GEAR R		1
	7-26	---	LIFT ARM		1

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q TY
	6-1	S8-059-110-060	LOADING BELT		1
	6-2	✳S8-059-110-030	LOADING PULLEY		1
	6-3	✳S8-059-113-030	LOADING CAM ASSY		1
	6-4	- - -	LOADING CAM		1
	6-5	- - -	S BRUSH		1
	6-6	✳S8-059-110-040	LOADING GEAR		1
	6-7	✳S8-059-110-140	EJECT ARM		1
	6-8	✳S8-059-110-130	BRAKE ACTUATE ARM		1
	6-9	✳S8-059-110-120	SEARCH ARM B		1
	6-10	✳S8-059-060-110	P SLIDER COLLAR		1
	6-11	✳S8-059-060-230	P-SPRING, SLIDER		1
	6-12	✳S8-059-060-100	P SLIDER		1
	6-13	✳S8-059-060-170	P CAM LEVER COLLAR		1
	6-14	✳S8-059-065-020	P CAM LEVER SEMI ASSY		1
	6-15	✳S8-059-060-130	P CRANK COLLAR		1
	6-16	✳S8-059-060-120	P CRANK		1
	6-17	✳S8-059-060-180	COLLAR		1
	6-18	✳S8-059-080-230	BT RETURN LEVER		1
	6-19	✳S8-059-080-100	BT CHANGE PLATE		1
	6-20	- - -	CHASSIS SEMI ASSY		1
	6-21	✳S8-059-070-140	FLYWHEEL CAPSTAN		1
	6-22	S8-059-070-100	MAIN BELT		1
	6-23	✳S8-059-073-030	FL ANGLE ASSY		1
	6-24	✳S6-808-080-030	REEL SENSOR		1

4

EXPLODED VIEW - 6



REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
A	S9-671-000-00	S TAPPING SCREW 2.6×5	D	S9-202-000-00	C TAPPING SCREW 3×5	G	S9-884-000-00	PW CUT 2.6×6×0.5
B	S9-192-000-00	C TAPPING SCREW 2.6×5	E	S9-876-000-00	PW CUT 2.1×5×0.5	H	S9-999-180-10	C TAPPING FH SCREW 2.6×4
C	S9-912-000-00	PW 3.1×6×0.5	F	S9-999-030-10	PW CUT 2.6×8×0.5	I	S9-743-000-00	PW CUT 1.6×3.8×0.3

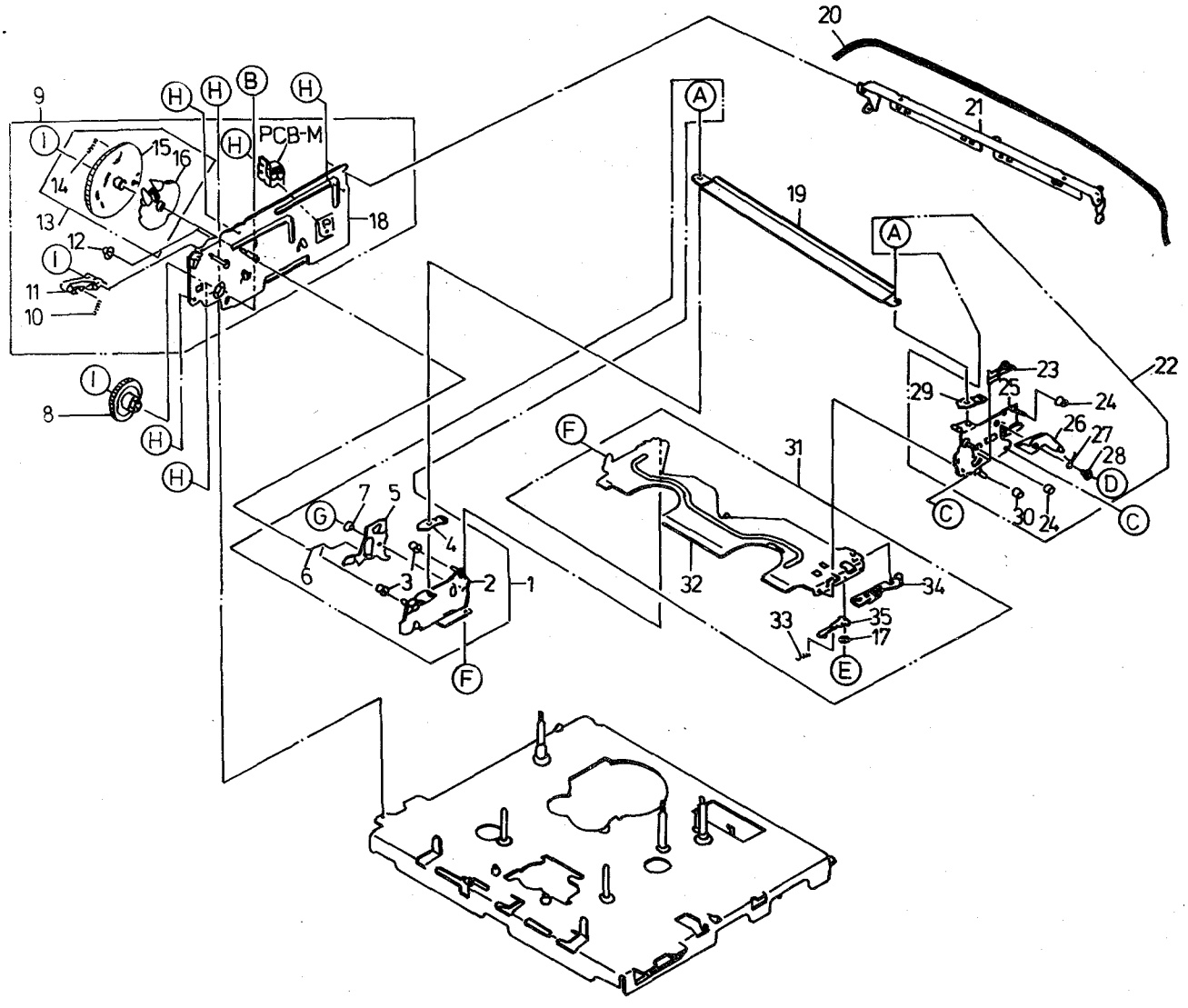
PART NO. CHANGED TO	REF NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	8-1	*S8-059-163-090	SIDE PLATE L ASSY		1
	8-2	---	SIDE PLATE L SEMI ASSY		1
	8-3	---	GUIDE ROLLER		2
	8-4	---	CASSETTE PUSH PLATE		1
	8-5	---	C LCOK PLATE L		1
	8-6	---	LOCK PLATE SPRING L		1
	8-7	---	LOCK PLATE COLLAR		1
	8-8	*S8-059-160-170	SYNCHRONIZE GEAR A		2
	8-9	*S8-059-163-130	FRAME L ASSY		1
	8-10	---	LIFT LEVER SPRING		1
	8-11	*S8-000-220-760	LIFT LEVER		1
	8-12	---	GUIDE SLEEVE		1
	8-13	*S8-059-163-140	LIFT GEAR L ASSY		1
	8-14	---	LP SPRING		1
	8-15	---	LIFT GEAR L		1
	8-16	---	LIFT ARM		1
	8-17	---	COLLAR		1
	8-18	---	FRAME L SEMI ASSY		1
	8-19	*S8-000-220-650	TOP STAY		1
	8-20	---	END SENSOR WIRE		1
	8-21	*S8-059-160-090	REAR ANGLE		1
	8-22	*S8-059-163-080	SIDE PLATE R ASSY		1
	8-23	---	LOCK RELEASY LEVER		1
	8-24	---	GUIDE ROLLER		2
	8-25	---	SIDE PLATE R SEMI ASSY		1
	8-26	*S8-000-220-250	OPEN LEVER		1
	8-27	---	OPEN LEVER SPRING		1
	8-28	---	OPEN LEVER COLLAR		1
	8-29	---	CASSETTE PUSH PLATE		1
	8-30	---	GUIDE ROLLER		1
	8-31	*S8-059-163-060	CASSETTE HOLDER ASSY		1
	8-32	---	CASSETTE HOLDER		1
	8-33	---	LOCK SPRING		1
	8-34	---	SLIDE PLATE		1
	8-35	---	C LOCK PLATE A		1

4

■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	*89-JU9-907-010	INSTRUCTION BOOKLET, HDK		1
	2	*87-034-593-010	CORD, RF PAL		1
	3	*87-034-755-010	AC CORDSET ASSY,E		1
	4	*89-JU7-613-010	REMOTE UNIT,RC T31P		1

EXPLODED VIEW-8

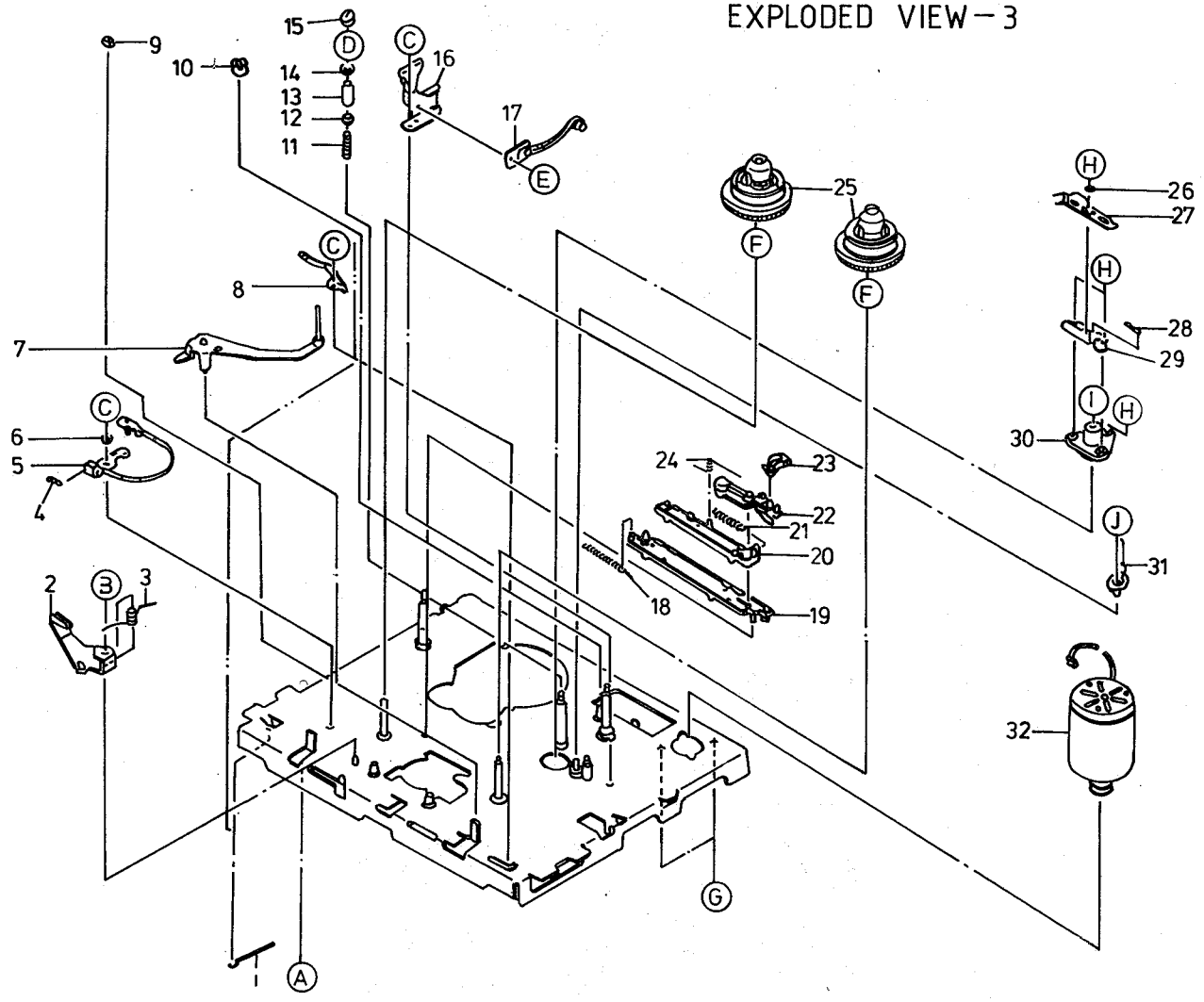


REF. NO.	PART. NO.	DESCRIPTION	REF. NO.	PART. NO.	DESCRIPTION	REF. NO.	PART. NO.	DESCRIPTION
A	S9-833-000-00	SCREW 2.3×2	D	S9-967-000-00	SL SCREW 2×4	G	S9-966-000-00	SL SCREW 2×2.5
B	S9-192-000-00	C TAPPING SCREW 2.6×4	E	S9-968-000-00	SL SCREW 2.6×3	H	S9-096-000-00	TAMS SCREW 2.6×4
C	S9-556-000-00	SCREW 2.6×3	F	S9-991-000-00	SCREW 2.3×2.5	I	S9-504-000-00	E RING S2.5

PART NO, CHANGED	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-1	*S8-059-080-200	BT ACTUATE PLATE SPRING		1
	3-2	*S8-059-103-040	S SOFT BRAKE ASSY		1
	3-3	*S8-059-100-220	S SOFT BRAKE SPRING		1
	3-4	*S8-059-080-170	BAND HOLDER SPRING		1
	3-5	*S8-059-083-020	BT BAND ASSY		1
	3-6	*S8-059-080-150	BAND HOLDER COLLAR		1
	3-7	*S8-059-085-010	BT ARM SEMI ASSY		1
	3-8	*S8-059-080-090	BACK TENSION SUPPORT		1
	3-9	*S8-059-080-230	DAMPER RUBBER		1
	3-10	*S8-059-020-290	TRACKING ADJUSTER		1
	3-11	*S8-059-020-260	TAPE GUIDE SPRING		1
	3-12	*S8-000-030-290	TAPE GUIDE FLANGE D		1
	3-13	*S8-000-030-140	TAPE GUIDE		1
	3-14	*S8-000-030-280	TAPE GUIDE FLANGE C		1
	3-15	*S8-000-030-190	GUIDE CAP		1
	3-16	*S8-059-023-010	OPEN ANGLE ASSY		1
	3-17	*S6-808-080-040	DEW SENSOR EYH-S10R		1
	3-18	*S8-059-100-100	BRAKE ACTUATE BASE SPRING		1
	3-19	*S8-059-100-090	BRAKE ACTUATE BASE		1
	3-20	*S8-059-100-110	BRAKE PLATE		1
	3-21	*S8-059-100-120	BRAKE PLATE SPRING		1
	3-22	*S8-059-100-130	TRIGGER LEVER		1
	3-23	*S8-059-100-140	TRIGGER HOOK		1
	3-24	*S8-059-100-230	TRIGGER LEVER SPRING		1
	3-25	S8-059-053-010	REEL ASSY		2
	3-26	*S8-059-170-100	RG SLIDE PLATE COLLAR		1
	3-27	*S8-059-170-030	RG SLIDE PLATE		1
	3-28	*S8-059-170-110	RG SLIDE SPRING		1
	3-29	*S8-059-170-090	RG SLIDE BASE		1
	3-30	*S8-059-073-010	METAL HOUSING ASSY		1
	3-31	*S8-059-175-010	RG ARM SEMI ASSY		1
	3-32	S8-059-073-020	CAPSTAN MOTOR ASSY		1

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q TY
	4-1	*S8-059-060-240	P SLIDE PLATE A		1
	4-2	*S8-059-060-250	P SLIDE PLATE B		1
	4-3	*S8-059-060-180	COLLAR		1
	4-4	S8-059-063-010	PINCH ROLLER ARM ASSY		1
	4-5	*S8-059-065-010	PINCH ROLLER ARM SEMI ASSY		1
	4-6	S8-000-090-220	PINCH ROLLER A		1
	4-7	*S8-059-060-190	P ANGLE HOLDER		1
	4-8	*S8-059-060-200	P-SPRING, ROLLER		1
	4-9	*S8-059-060-060	JOINT PLATE		1
	4-10	*S8-059-060-050	P ACTUATE ANGLE		1
	4-11	*S8-059-060-180	COLLAR		1
	4-12	*S8-059-060-040	P ACTUATE ARM		1
	4-13	*S8-059-060-090	P-SPRING, ACTUATE ARM		1
	4-14	*S8-059-040-090	TAPE GUIDE FLANGE SPRING		1
	4-15	*S8-059-040-070	TAPE GUIDE FLANGE A		1
	4-16	*S8-059-040-060	IMPEDANCE ROLLER SLEEVE		1
	4-17	*S8-059-040-050	IMPEDANCE ROLLER		1
	4-18	*S8-059-043-070	HEAD BASE ASSY		1
	4-19	---	AZIMUTH SPRING SCREW		1
	4-20	---	AZIMUTH SPRING		1
	4-21	S8-204-150-080	ACE HEAD HV224206		1
	4-22	---	HEAD BASE SEMI ASSY		1
	4-23	---	HEAD SPRING		1
	4-24	*S8-059-093-050	P GEAR ASSY		1
	4-25	*S8-059-090-200	PLAY GEAR		1
	4-26	*S8-059-093-030	P GEAR ARM ASSY		1
	4-27	*S8-059-093-060	RF GEAR ASSY		1
	4-28	*S8-059-090-220	FF GEAR		1
	4-29	*S8-059-093-040	RF GEAR ARM ASSY		1
	4-30	*S8-059-093-070	SUB PLATE ASSY		1
	4-31	*S8-059-100-070	T SOFT BRAKE ARM COLLAR		1
	4-32	*S8-059-103-030	T SOFT BRAKE ASSY		1
	4-33	*S8-059-100-060	T-SPRING, SOFT BRAKE ARM		1
	4-34	---	SUB PLATE SEMI ASSY		1
	4-35	*S8-000-100-250	WAVE WASHER		2

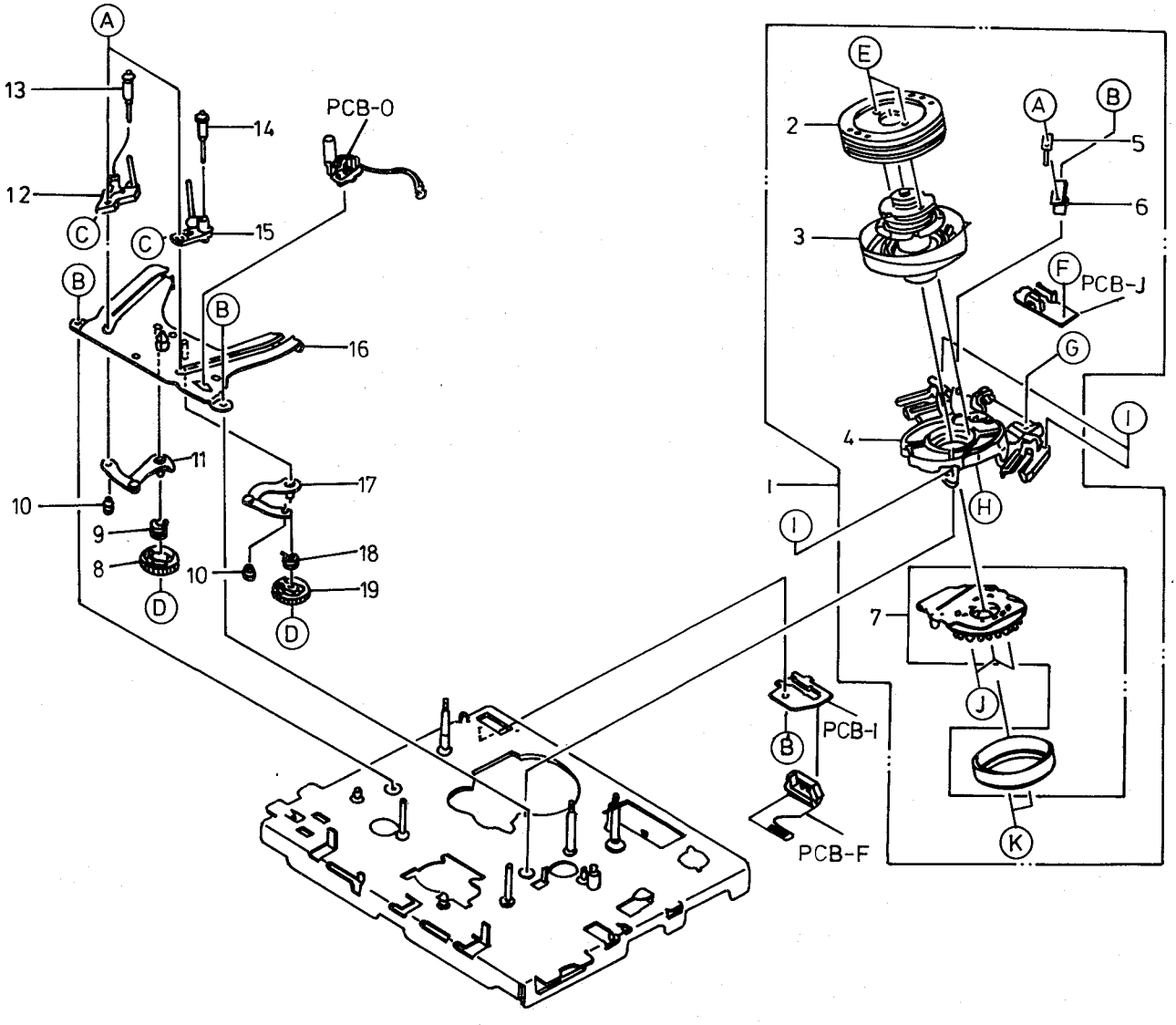
EXPLODED VIEW – 3



REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A	S9-999-030-15	P WASHER CUT 2.1×4×0.5	E	S9-096-000-00	TAMS SCREW 2.6×4	I	S9-999-060-00	NYLON WASHER 29.2×5×0.5
B	S9-876-000-00	P WASHER CUT 2.1×5×0.5	F	S9-912-000-00	R WASHER 1×6×0.5	J	S9-884-000-00	PW 2.6×6×0.5 CUT
C	S9-191-000-00	C TAPPING SCREW 2.6×4	G	S9-105-000-00	TAMS SCREW 3×4			
D	S9-453-000-00	NUT 3.0	H	S9-495-000-00	C TAPPING SCREW 2.6×8			

4

EXPLODED VIEW — 2



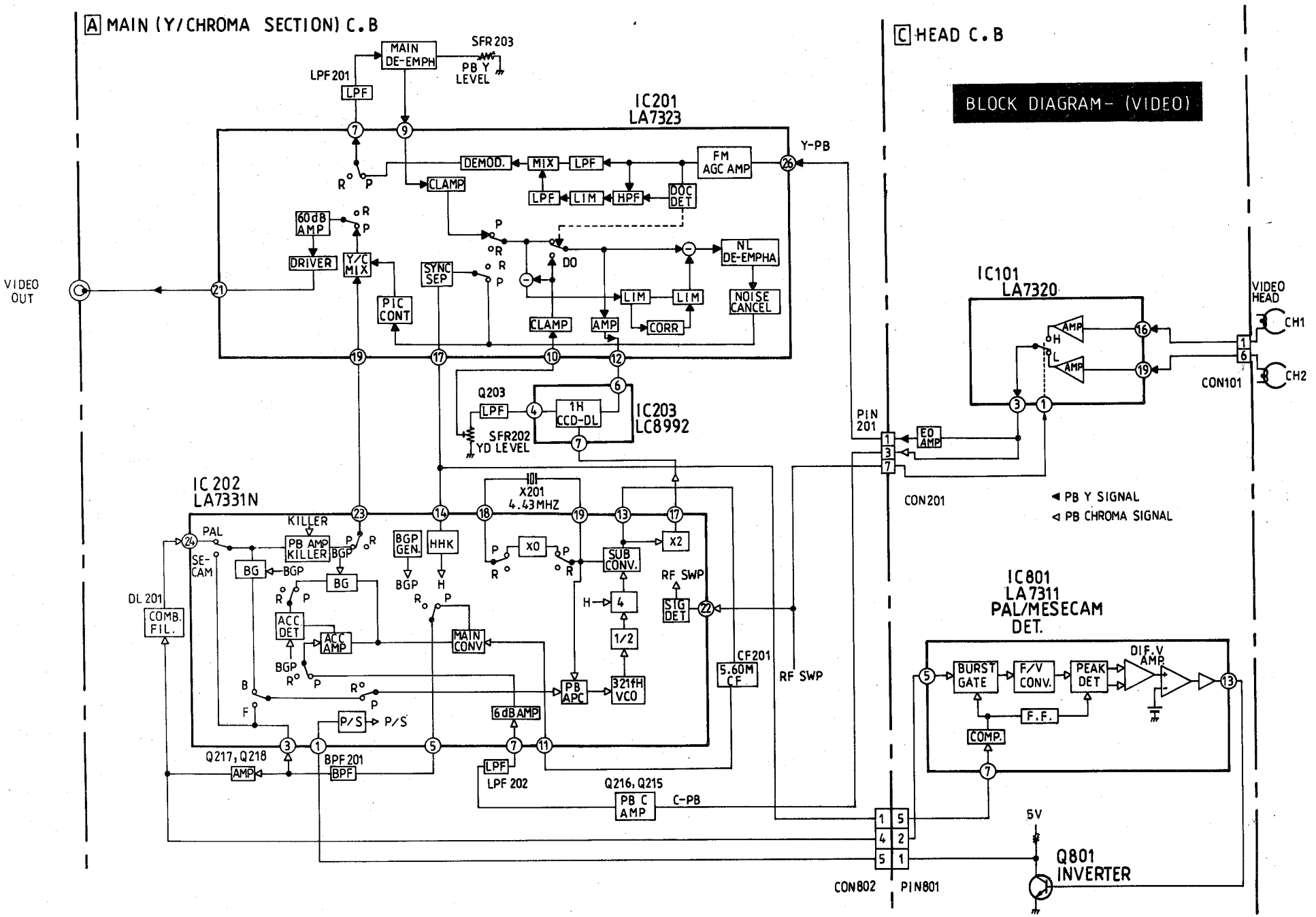
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A	S9-665-000-00	CUP SCREW 2.6 × 3	E	S9-972-000-00	BIND TAMS SCREW 3×8	I	S9-205-000-00	C TRAMPING SCREW 3×10
B	S9-192-000-00	C TAPPING SCREW 2.6×5	F	S9-973-000-00	W TAMS SCREW 2.6×6	J	S9-050-000-00	SCREW 2.6×2.0
C	S9-952-000-00	SET SCREW 2.0×3 (PLANE)	G	S9-715-000-00	WASHER 2.6	K	S9-098-000-00	TAMS SCREW 2.6×6
D	S9-884-000-00	PV CUT 2.6×6×0.5	H	S9-552-000-00	SCREW (FOR CAMERA) 2×5			

MECHANICAL PARTS LIST

PART NO CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	*09-057-044-010	CABINET FRONT ASSY (E101GPSH)	*	1
	1-1	*09-057-045-010	CABINET FRONT ASSY (E101DIPH)	*	1
	1-1	*09-057-046-010	CABINET FRONT ASSY (E101GPSE)	*	1
	1-1	*09-057-065-010	CABINET FRONT ASSY (E101SGPSH)	*	1
	1-1	*09-057-069-010	CABINET FRONT ASSY (E101DKGPSH)	*	1
	1-1	*09-057-043-010	CABINET FRONT ASSY (E303GPSH)	*	1
	1-1	*09-057-053-010	CABINET FRONT ASSY (E303SGPSE)	*	1
	1-1	*09-057-071-010	CABINET FRONT ASSY (E303SGPSH)	*	1
	1-2	*89-JU9-002-110	DOOR, CASSETTE 9 (E101)	*	1
	1-2	*89-JU7-003-110	DOOR, CASSETTE (E303)	*	1
	1-3	*89-JU7-201-010	REFLECTOR (E303)	*	1
	1-4	*89-JU7-010-010	KNOB, VOLUME	*	1
	1-5	*89-JU7-009-010	KNOB SLIDE (E303)	*	1
	1-6	*89-JU7-018-010	PLATE, FOOT	*	2
	1-7	*89-JU7-014-010	FOOT	*	2
	1-8	*89-JU7-002-010	CABINET, MAIN	*	1
	1-9	*89-JU7-211-010	PLATE, EARTH	*	1
	1-10	*89-JU7-013-010	PLATE, REAR (E101GPSH, E303GPSH)	*	1
	1-10	*89-JU7-022-010	PLATE, REAR (E101SGPSH, E303SGPSH)	*	1
	1-10	*89-JU9-011-010	PLATE REAR (E101DIPH)	*	1
	1-10	*89-JU9-023-010	PLATE, REAR (E101DKGPSH)	*	1
	1-10	*89-JU9-009-010	PLATE, REAR (E101GPSE, E303GPSE)	*	1
	1-11	*89-JU7-015-010	CABINET, STEEL	*	1
	1-12	*89-JU9-006-010	PLATE, SPEC (E101GPSH)	*	1
	1-12	*89-JU9-012-010	PLATE, SPEC (E101DIPH)	*	1
	1-12	*89-JU9-007-010	PLATE, SPEC (E101GPSE)	*	1
	1-12	*89-JU9-008-010	PLATE, SPEC (E101GPSE1)	*	1
	1-12	*89-JU9-019-010	PLATE, SPEC (E101SGPSH)	*	1
	1-12	*89-JU9-024-010	PLATE, SPEC (E101DKGPSH)	*	1
	1-12	*89-JU7-016-010	PLATE, SPEC (E303GPSH)	*	1
	1-12	*89-JU7-023-010	PLATE, SPEC (E303SGPSH)	*	1
	1-12	*89-JU7-020-010	PLATE, SPEC (E303GPSE)	*	1

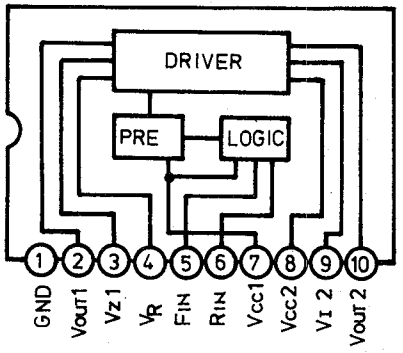
PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	2-1	*S8-059-013-090	CYLINDER ASSY		1
	2-2	S8-059-010-160	UPPER DRUM		1
	2-3	*S8-059-013-040	LOWER DRUM ASSY		1
	2-4	*S8-059-010-010	CYLINDER MOUNT		1
	2-5	*S8-059-010-230	DRUM EARTH		1
	2-6	*S8-059-010-020	DRUM EARTH BRACKET		1
	2-7	S6-004-090-010	CYLINDER MOTOR TM82		1
	2-8	*S8-059-030-060	T LOADING GEAR L		1
	2-9	*S8-059-030-080	LOADING GEAR SPRING L		1
	2-10	*S8-059-030-140	LOADING BOSS		2
	2-11	*S8-059-035-020	LOADING PLATE L SEMI ASSY		1
	2-12	*S8-059-030-040	LOADING BLOCK L		1
	2-13	*S8-000-030-370	ROLLER POST ST		1
	2-14	*S8-000-030-370	ROLLER POST ST		1
	2-15	*S8-059-030-050	LOADING BLOCK R		1
	2-16	*S8-059-035-010	LOADING BASE SEMI ASSY		1
	2-17	*S8-059-035-030	LOADING PLATE R SEMI ASSY		1
	2-18	*S8-059-030-090	LOADING GEAR SPRING R		1
	2-19	*S8-059-030-070	T LOADING GEAR R		1

BLOCK DIAGRAM- (VIDEO)

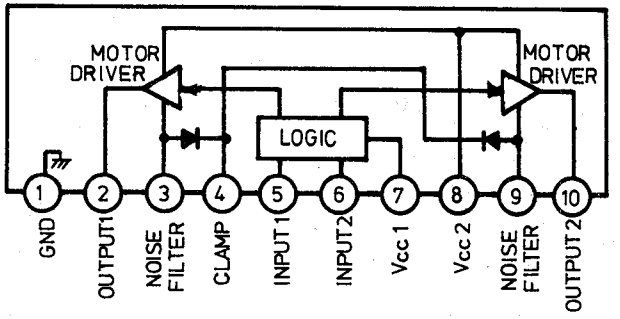


IC BLOCK DIAGRAM

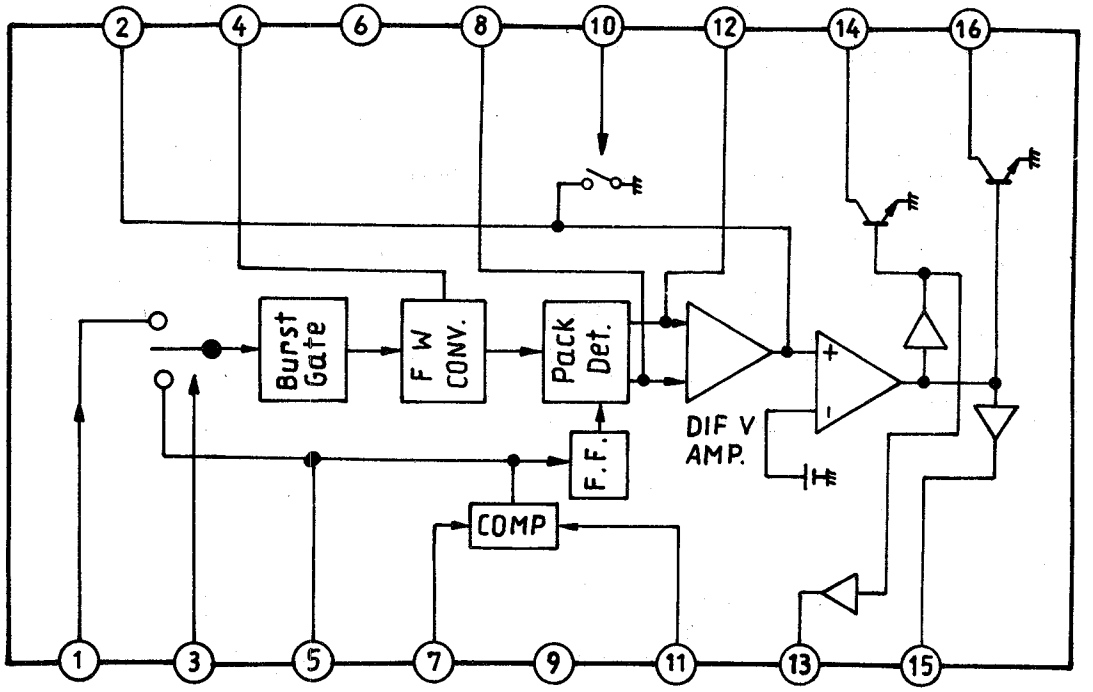
IC,BA6209



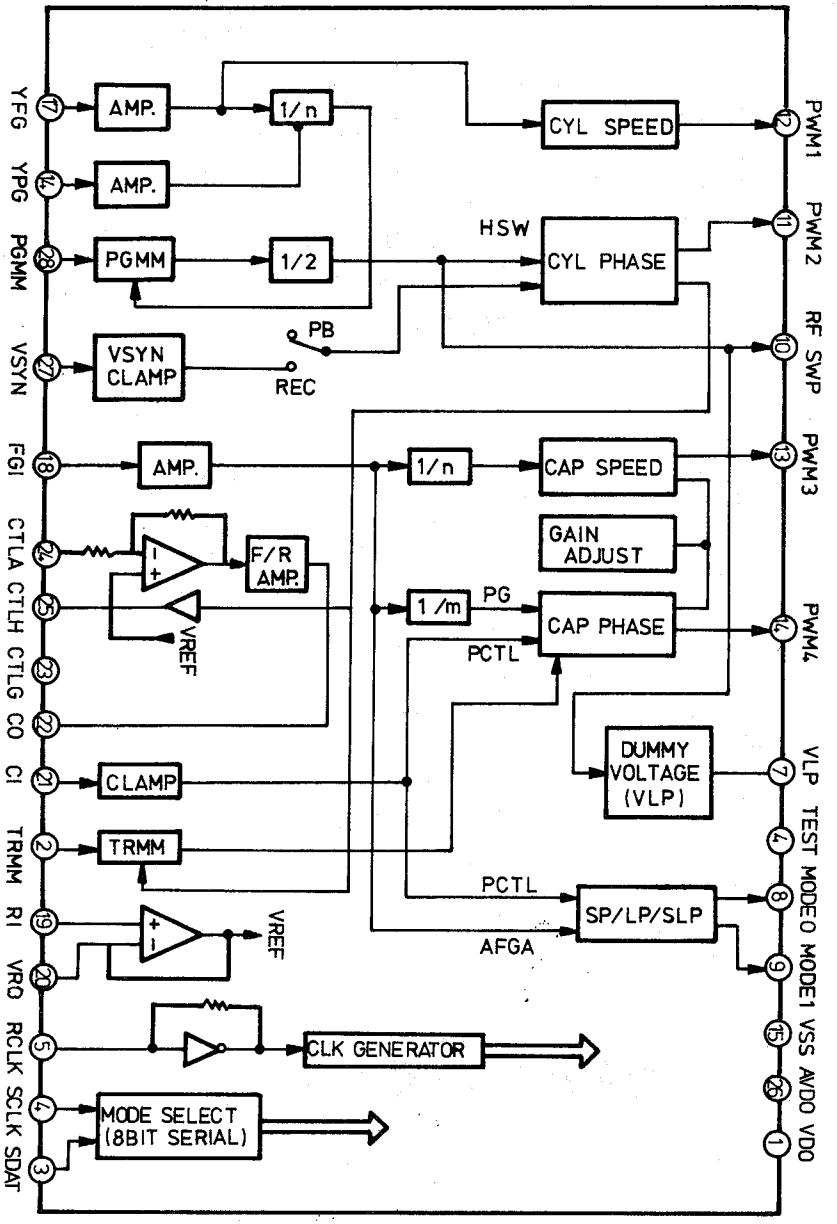
IC,BA 6219 B



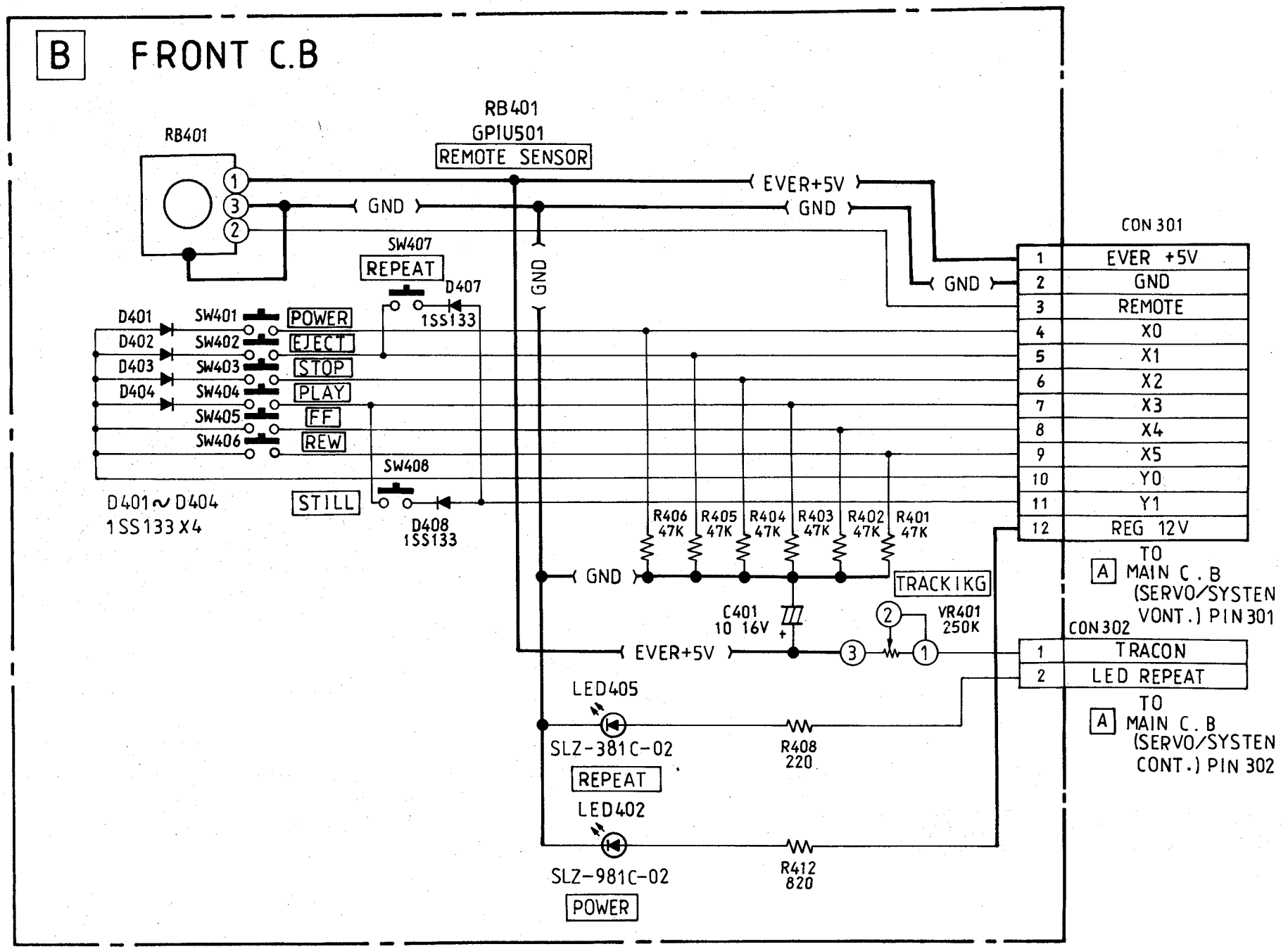
IC,LA 7311



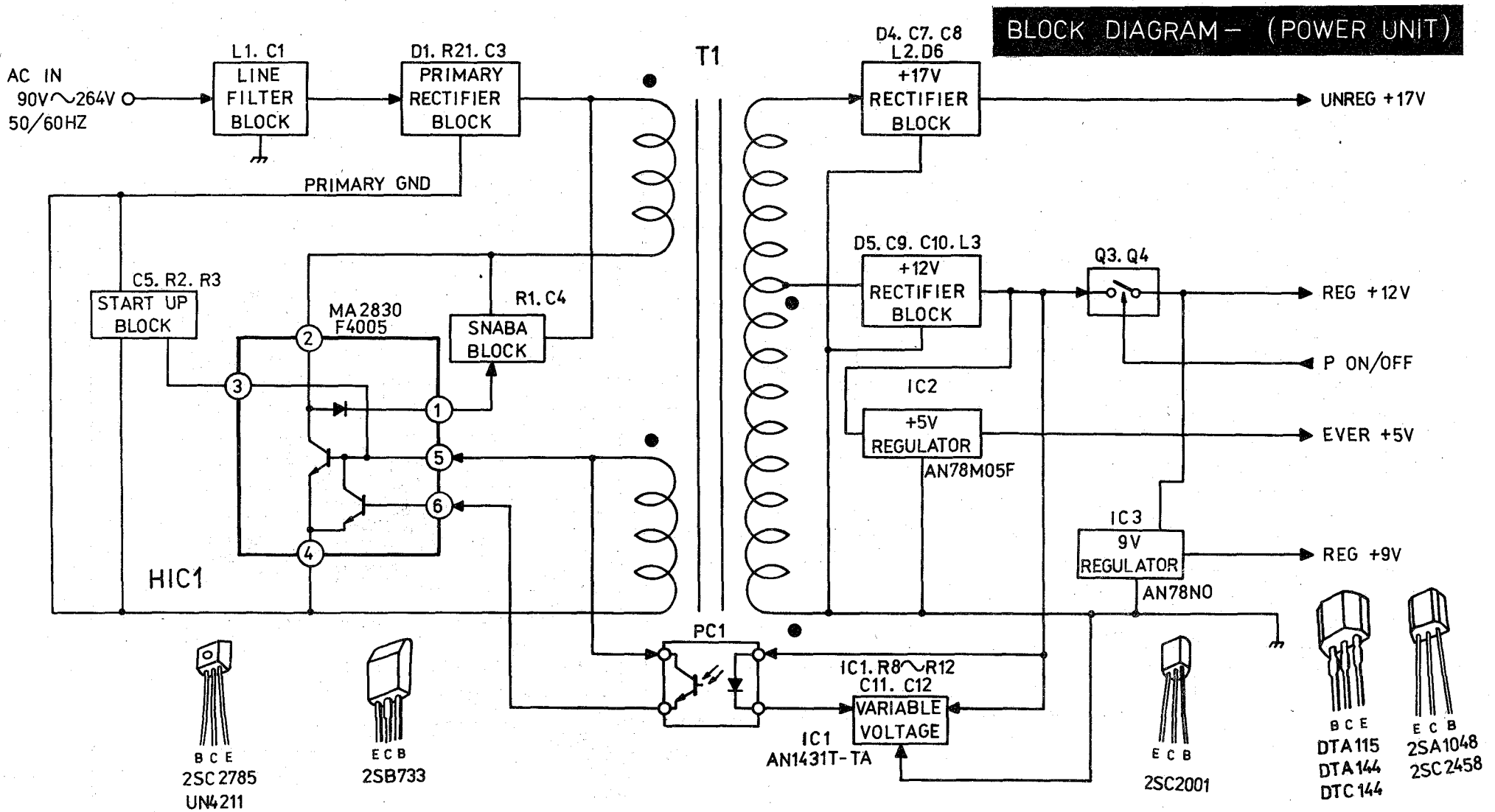
IC,MN67481

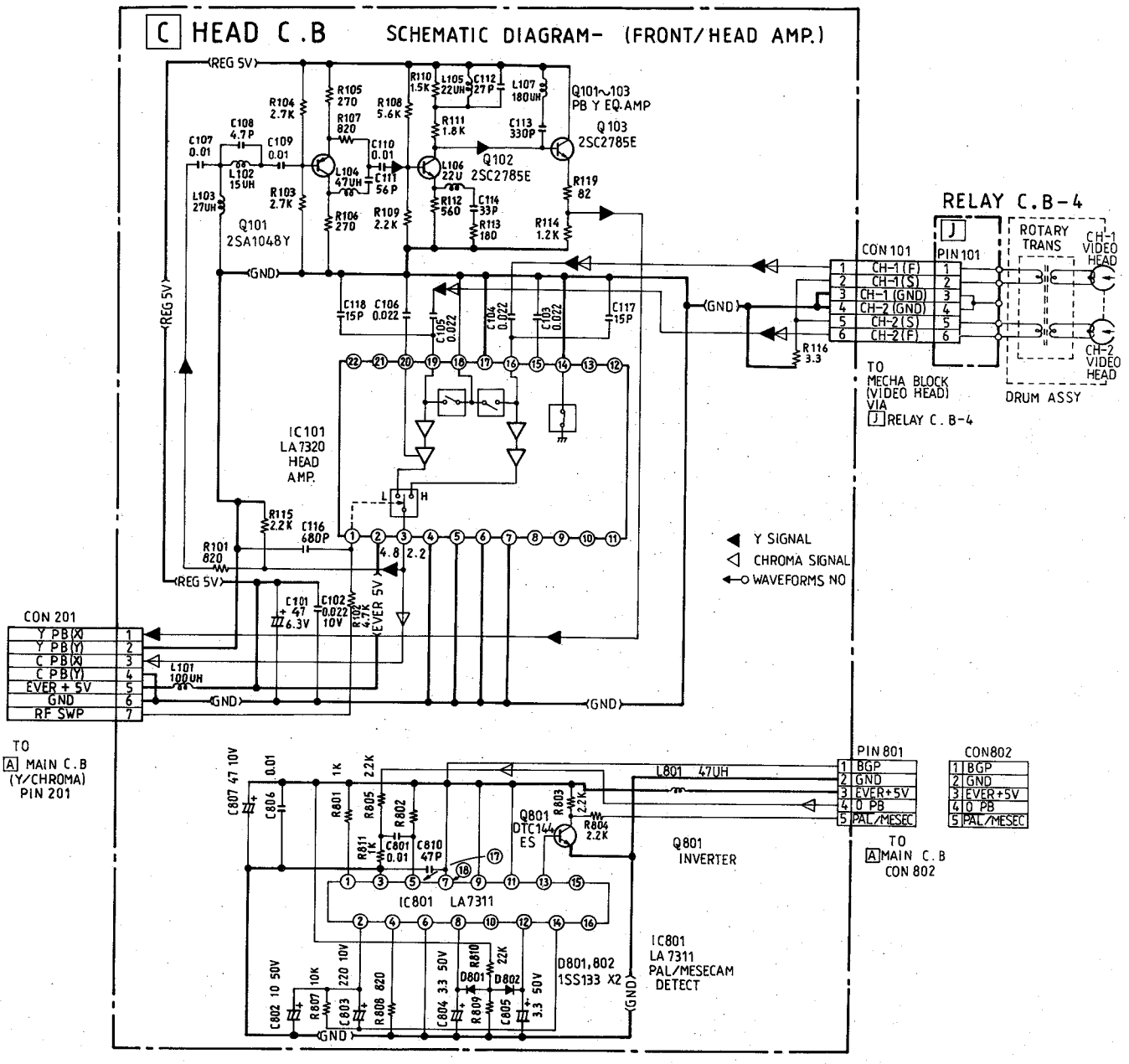


B FRONT C.B


RB401
RB401
GP1U501
REMOTE SENSOR
EVER+5V
GND
GND
GND
GND
SW407
REPEAT
D407
1SS133
D401
D402
D403
D404
SW401
SW402
SW403
SW404
SW405
SW406
POWER
EJECT
STOP
PLAY
FF
REW
SW408
STILL
D408
1SS133
D401~D404
1SS133X4
R406 47K
R405 47K
R404 47K
R403 47K
R402 47K
R401 47K
GND
TRACKING
C401
10 16V
VR401
250K
EVER+5V
LED405
SLZ-381C-02
REPEAT
R408
220
LED402
SLZ-981C-02
POWER
R412
820
CON301
1 EVER +5V
2 GND
3 REMOTE
4 X0
5 X1
6 X2
7 X3
8 X4
9 X5
10 Y0
11 Y1
12 REG 12V
TO A MAIN C.B (SERVO/SYSTEN VONT.) PIN301
CON302
1 TRACON
2 LED REPEAT
TO A MAIN C.B (SERVO/SYSTEN CONT.) PIN 302

BLOCK DIAGRAM – (POWER UNIT)




C HEAD C.B SCHEMATIC DIAGRAM- (FRONT/HEAD AMP.)
RELAY C.B-4
IC101 LA7320 HEAD AMP.
IC801 LA7311
IC801 LA 7311 PAL/MESECAM DETECT
D801,802 1SS133 X2
Q101~103 PB Y EQ.AMP
Q101 2SA1048Y
Q102 2SC2785E
Q103 2SC2785E
Q801 DTC144 ES
Q801 INVERTER
ROTARY TRANS
DRUM ASSY
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
CON 101
PIN 101
CH-1(F)
CH-1(S)
CH-1 (GND)
CH-2 (GND)
CH-2 (S)
CH-2 (F)
TO MECHA BLOCK (VIDEO HEAD) VIA J RELAY C.B-4
CON 201
Y PB(X)
Y PB(Y)
C PB(X)
C PB(Y)
EVER + 5V
GND
RF SWP
TO A MAIN C.B (Y/CHROMA) PIN 201
PIN 801
CON802
BGP
GND
EVER+5V
0 PB
PAL/MESEC
TO A MAIN C.B CON 802
Y SIGNAL
CHROMA SIGNAL
WAVEFORMS NO
REG 5V
GND
EVER 5V

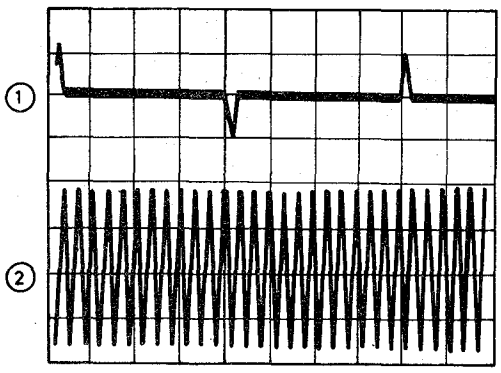
5

WAVE FORM-1

SERVO WAVE FORM

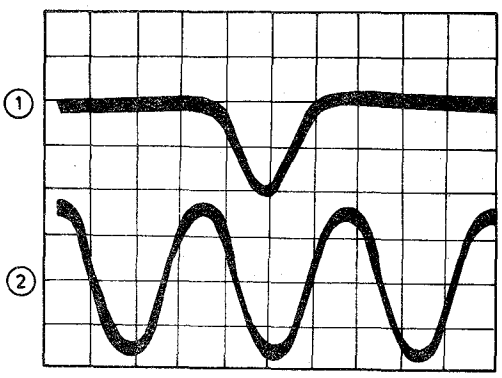
1. DRUM PG AND FG

Upper : DRUM PG AC 0.1V/DIV (IC306 ⑯ pin)
Lower : DRUM FG AC 50mV/DIV (IC306 ⑰ pin)
Time 5msec/DIV



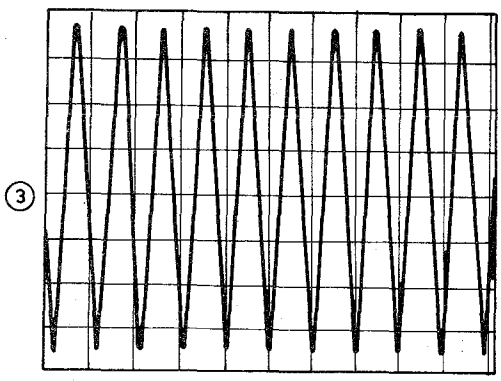
2. DRUM PG AND FG

Enlargement of 1
When the PG pulse (upper) is generated (either positive or negative), the FG pulse (lower) is a negative half wave.



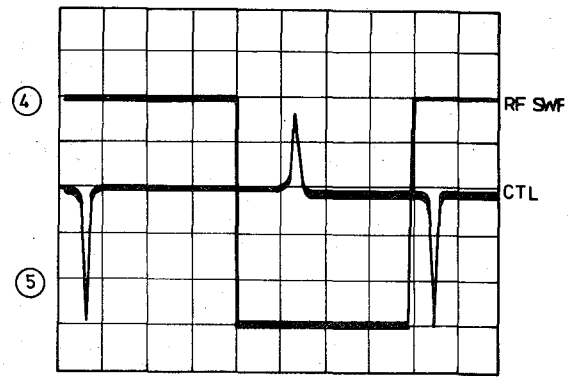
3. CAP FG (IC306 ⑱ pin)

AC 50mV/DIV
Time 2msec/DIV



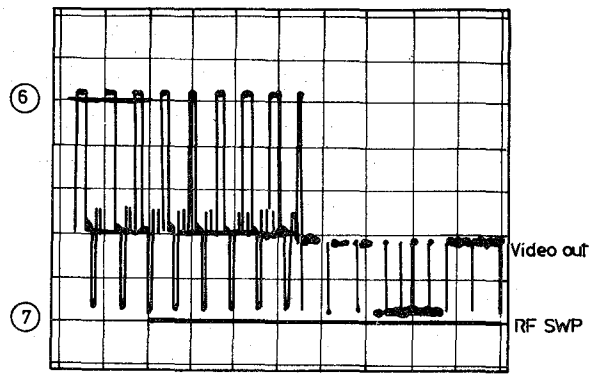
4 RF SW PULSE AND CTL

RF SW Pulse DC 1V/DIV (IC306 ⑩ pin)
CTL AC 0.5V/DIV (IC306 ㉒ pin)
Time 5msec/DIV
The CTL pulse (negative) is 2.3 ± 2.5msec from the leading edge of the RF SW pulse.

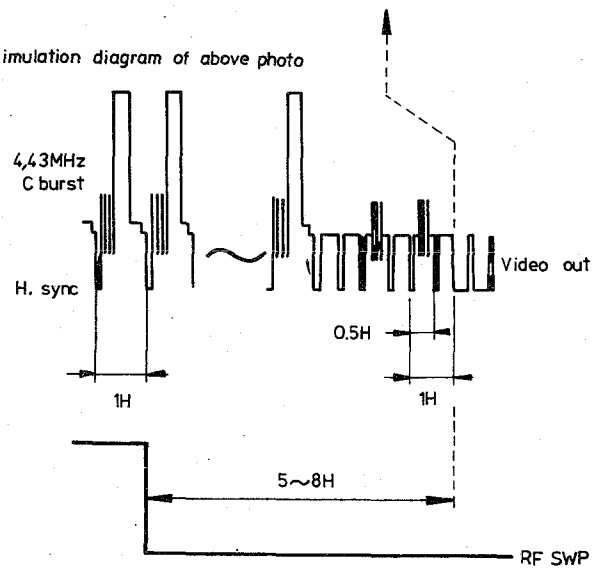


5 RF SW PULSE AND VIDEO OUT

RF SW Pulse DC 1V/DIV (IC306 ⑩ pin)
Video out (open) AC 0.5V/DIV
Time 0.1msec/DIV
The RF SW pulse rises or fallas 5~8H (320~512μ sec) before the VD (vertical sync) signal in the video signal.



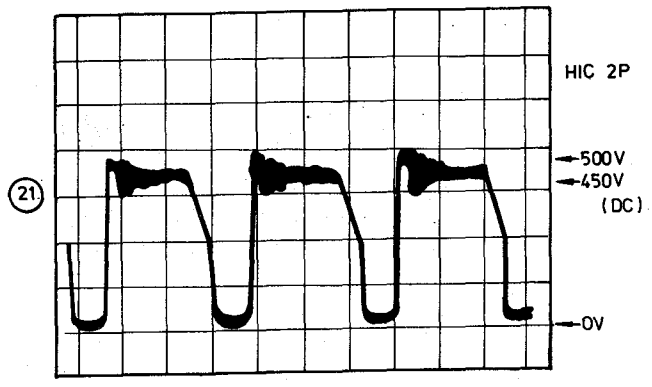
Simulation diagram of above photo

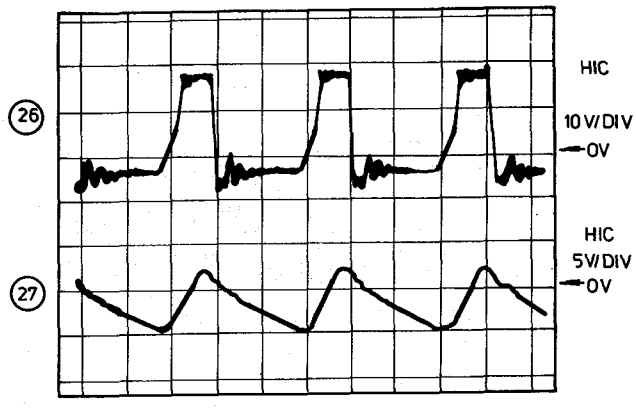


5

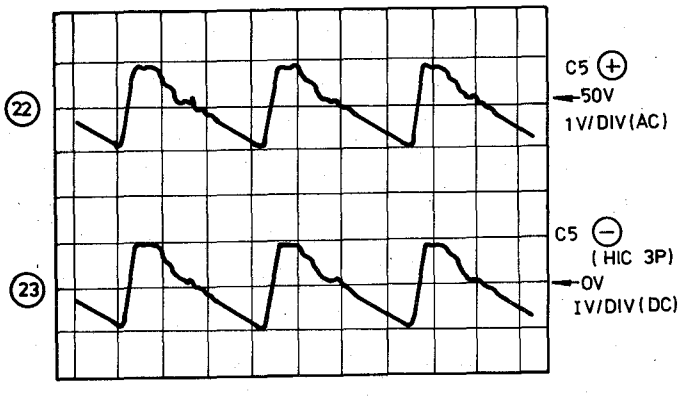
WAVE FORM - 3

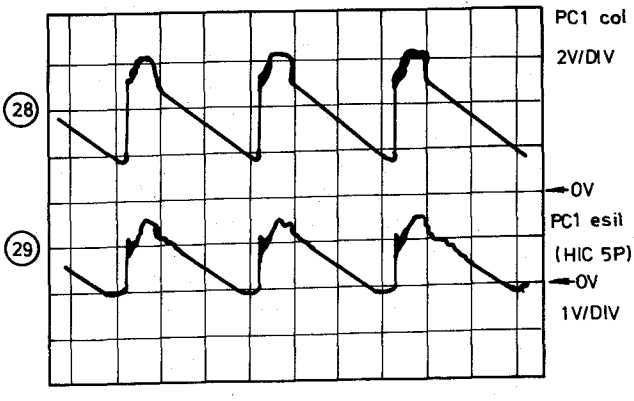
POWER UNIT WAVE FORM

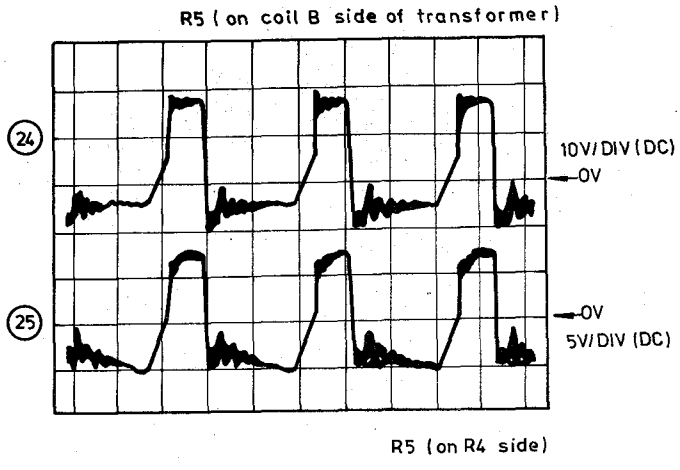


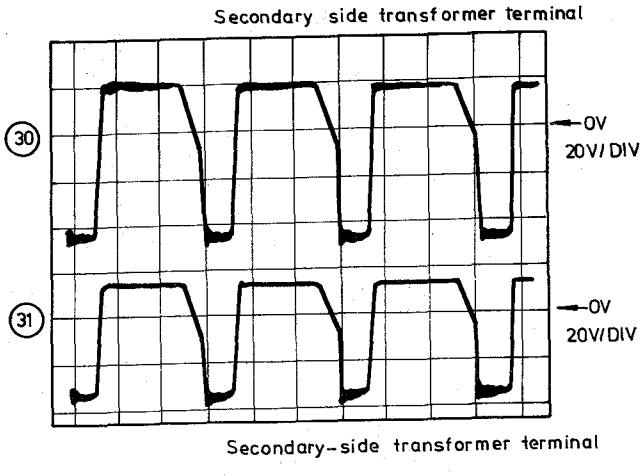


5









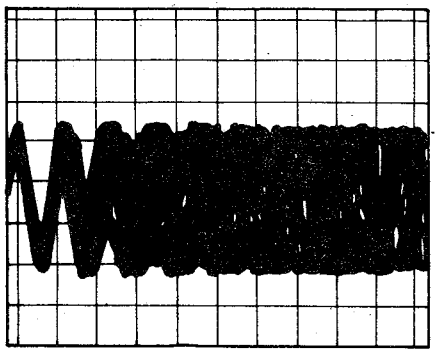
- When checking waveforms (21) – (29), connect the negative (–) terminal of C3 to ground (GND on primary side).
- When checking waveforms (30) and (31), connect pin 2 of CON101 to ground (GND on secondary side).
- Waveforms should be measured in the PB mode and with AC 220V power input.

Y – PROCESS WAVE FORM

Y FM signal IC201 pin (26) Tape used : TTV-P1

200mV/DIV 0.5μs/DIV

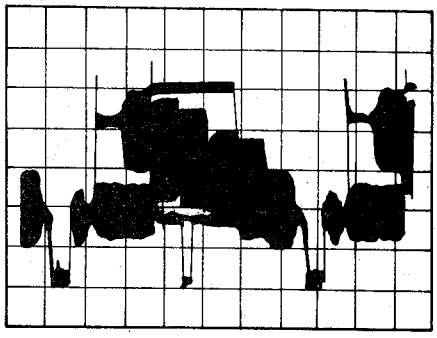
(8)



VIDEO OUT jack (terminated with 75 ohm)

200mV/DIV 10μs/DIV

(12)

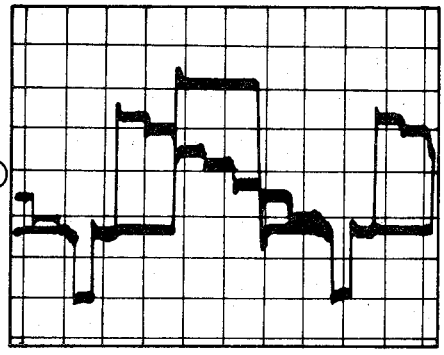


Y signal (DEMODULATION) level

IC201 pin (9) Tape used : TTV-P1

100mV/DIV 10μs/DIV

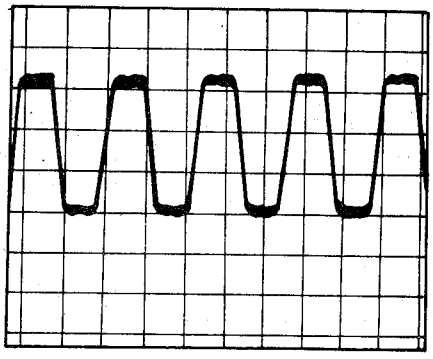
(9)



fsc : 4.43MHz OSC Center of R258 and R259

100mV/DIV 0.1μs/DIV

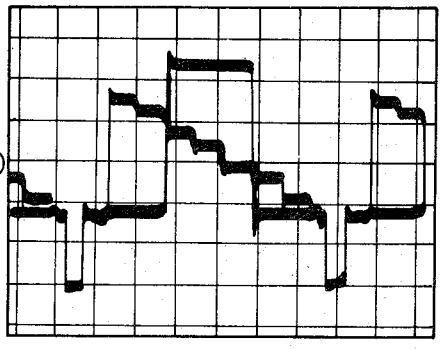
(13)



Y DL LEVEL

IC201 pin (10) 100mV/DIV 10μs/DIV

(10)

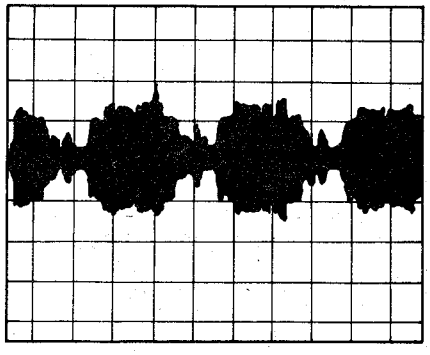


CHROMA PROCESS WAVE FORM

PB CHROMA SIGNAL IC202 pin (7)

100mV/DIV 20μs/DIV

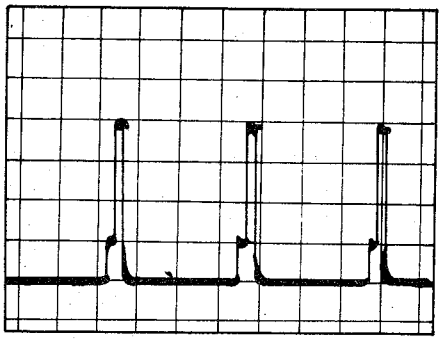
(14)



COMP SYNC

IC201 pin (17) 1V/DIV 20μs/DIV

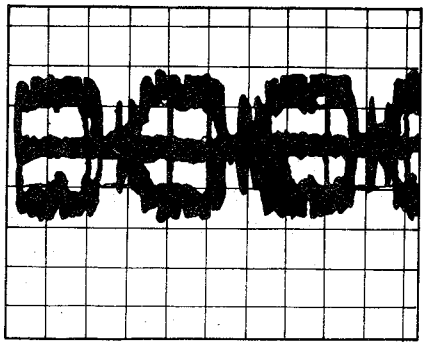
(11)



PB CHROMA SIGNAL (DEMODULATION)

IC202 pin (24) 50mV/DIV 20μs/DIV

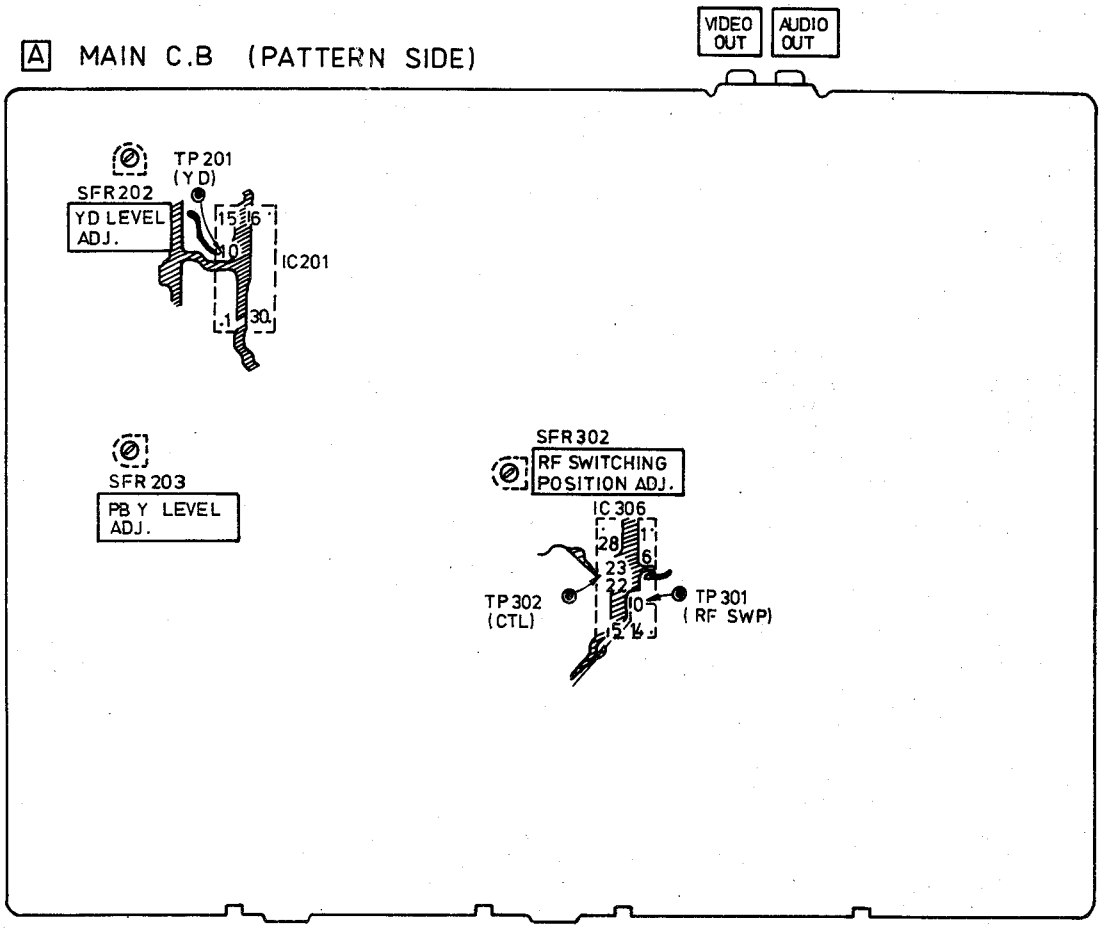
(15)



5

ELECTRICAL ADJUSTMENT

1. SERVICING LOCATIONS



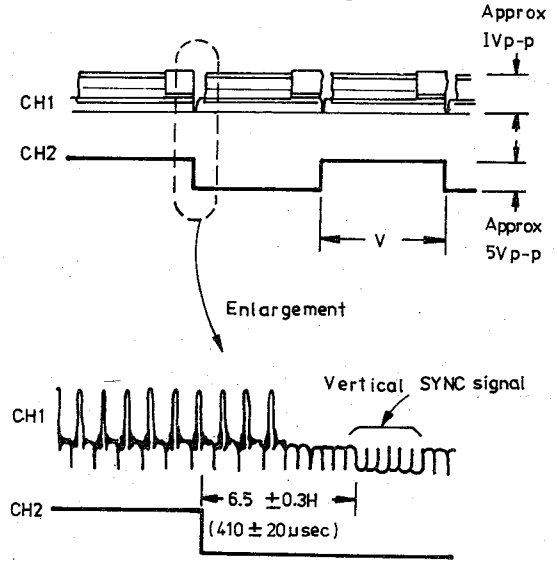
6

2. SERVO ADJUSTMENT

1. SWITCHING POSITION ADJUSTMENT (MAIN BOARD)

Oscilloscope CH1 : VIDEO OUTPUT
CH2 : TP301 (RF SWP) (Pin ⑩ of IC306)

1) Play back the alignment tape TTV-P1.
2) Adjust SFR302 on MAIN board so that the switching position becomes as shown in Fig-2.

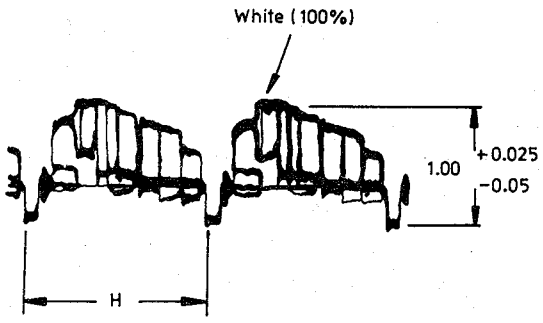


3. VIDEO ADJUSTMENT

1. PB Y LEVEL ADJUSTMENT (MAIN BOARD)

Oscilloscope: VIDEO OUT

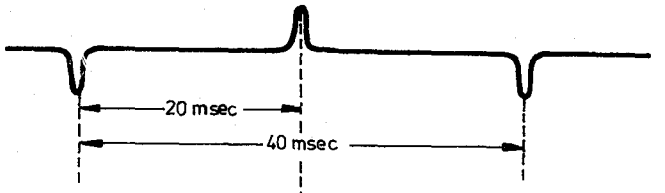
1) Terminale the VIDEO OUT jack with 75 ohm
2) Play back the alignment tape ITV-P1.
3) Adjust SRF203 so that the video output level is as shown in the diagram below.



SERVO SYSTEM TIMING CHART

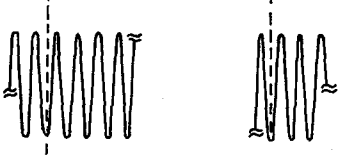
[DURING P.B]

* DRUM PG (IC306 ⑯ pin)



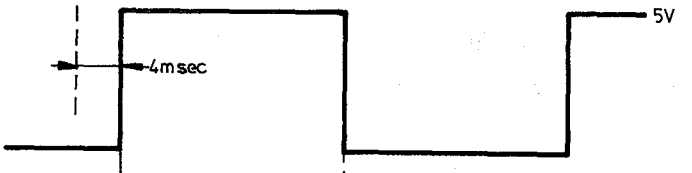
100mVp-p or more
(2.5VDC)
25Hz

*DRUM FG (IC306 ⑰ pin)



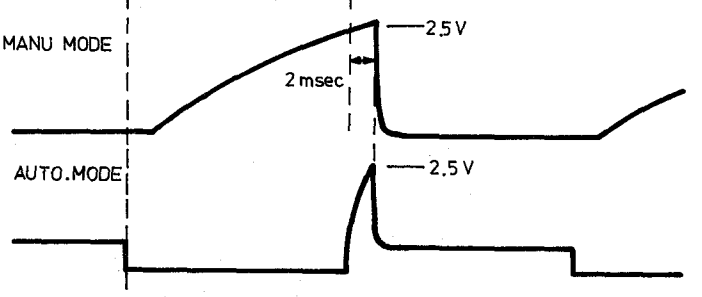
100mVp-p or more
(2.5VDC)
600 Hz

*RF SW PULSE (IC306 ⑩ pin)

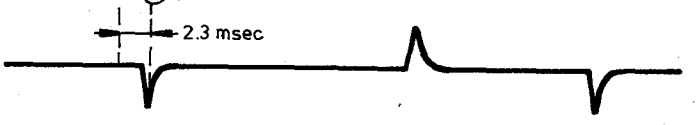


25Hz

*TRACKINGM. M.(IC306② pin)

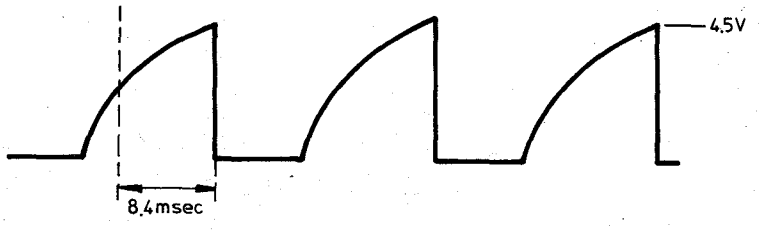


*CTL (IC306 ㉒ pin)

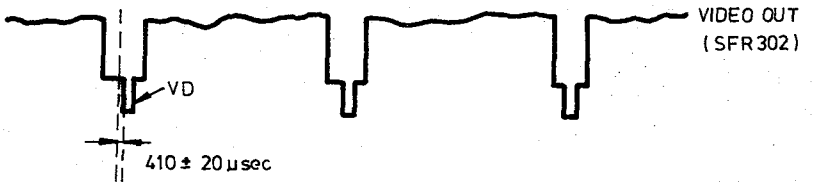


2.5V

*PG M M (IC306 ㉘ pin)



*SWITCHING POSITION



VIDEO OUT
(SFR302)

5

2.IC, UPD 75108CW-A47 (IC 301)

Pin No.	Pin Name	I/O	Description
1	TEST	I	Used during production. (Fixed at "H")
2	———	—	——— (Fixed at "H")
3	JOG VD	I	——— (Fixed at "L")
4	REMOTE	I	Receives a control signal from the light receiving block.
5	X0	I	Matrix input.
6	X1	I	Matrix input.
7	X2	I	Matrix input.
8	X3	I	Matrix input.
9	———	—	——— (Fixed at "L")
10	AUTO PLAY	I	Selects AUTO PLAY or not. (Fixed at "H")
11	Y0	O	Matrix output.
12	Y1	O	Matrix output.
13	Y2	O	Matrix output.
14	Y3	O	Matrix output.
15	X4	I	Matrix input.
16	X5	I	Matrix input.
17	X6	I	Matrix input. (Fixed at "L")
18	———	—	——— (Fixed at "L")
19	SCLK	O	Transfers a clock signal to the servo IC.
20	SDAT	O	Transfers data to the servo IC.
21	———	—	———
22	———	—	———
23	REEL SNS	I	Detecting a reel rotation pulse.
24	DRUM SNS	I	Detecting an RF SWP from the servo IC.
25	END	I	Tape end detection input.
26	START	I	Tape start detection input.
27	REC SAFETY	I	REC SAFETY switch input.
28	C IN	I	Cassette loading switch input.
29	C START	I	Cassette insertion switch input.
30	C OUT	I	Cassette ejection (ejection complete) switch input.
31	———	—	(Fixed to +5V power supply)
32	VDD	—	IC power supply (+5V).
33	JOG	O	Outputs "H" during CUE/REVIEW.
34	RST P	O	Outputs a reset pulse to the tracking microprocessor.
35	A MUTE 1	O	Mutes the audio output. Muting is relased when play starts.
36	———	—	———
37	———	—	———
38	E E	O	Mutes the video output. Muting is released when play starts.
39	———	—	———
40	$\overline{\text{DRUM ON}}$	O	Drum rotation on/off control.
41	TL-F	O	Tape loading motor forward rotation control.
42	TL-R	O	Tape loading motor reverse rotation control.
43	CM-F	O	Capstan motor forward rotation control.
44	CM-R	O	Capstan motor reverse rotation control.
45	$\overline{\text{RESET}}$	—	Hard reset.
46	X	—	Connected to the clock generator.
47	X	—	Connected to the clock generator.
48	CAP. SPEED	O	Stabilizes the speed when CUE/REVIEW is returned to PLAY.
49	FF/REW	O	Raises the gain of the capstan error amplifier during FF/REW.
50	———	—	———
51	———	—	———
52	———	—	———
53	———	—	———
54	———	—	———
55	STILL	O	Outputs "H" in the STILL mode.
56	PLAY	O	Outputs "H" in the PLAY mode.
57	———	—	———
58	REW	O	Outputs "H" in the REW mode.
59	FF	O	Outputs "H" in the FF mode.
60	VD. MUTE	O	Mutes the video output during power off.
61	REPEAT	O	Outputs "H" in the REPEAT mode.
62	D PB	O	Outputs " "when the tape transport is stabilized during PLAY.
63	POWER	O	Power unit on/off control Outputs "H" when the power unit is turned on.
64	VSS	—	GND of power supply.

Y-D LEVEL ADJUSTMENT (MAIN BOARD)

Oscilloscope : TP201 (YD) (Pin 10 of IC201)

1) Play back the alignment tape TTV-P1.

2) Adjust SFR202 so that the YD signal level is as shown in the diagram below.

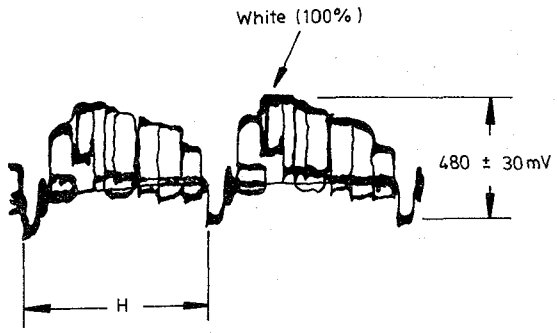


Fig-4

DESCRIPTION

IC,MN 67481P (IC306)

Pin. No.	Pin. Name.	I / O	Description
1	VDD	—	Power ssupply(+5V).
2	TR MM	I	Tracking monostable multivibrator. Delay time constant of CTL lock position adjustment.
3	SDAT	I	Servo mode setting data input.
4	SCLK	I	Servo mode setting clock input.
5	RCLK	I	Servo control reference timing clock input (4,43319MHz : PAL)
6	———	—	——— (Fixed at "L")
7	VLP	O	Artificial VD output.
8	MODE0	I / O	Speed detection output (Indicates the speed code with MODE1)
9	MODE1	I / O	Speed detection output.
10	RF SWP	O	RF SWP output.
11	PWM2	O	Drum servo phase error output.
12	PWM1	O	Drum servo speed error output.
13	PWM3	O	Capstan servo speed error output
14	PWM4	O	Capstan servo phase error output.
15	VSS	—	Power supply (GND).
16	YPG	I	Drum PG pulse input.
17	YFG	I	Drum FG pulse input.
18	FGI	I	Capstan FG pulse input.
19	RI	I	Sets the reference center voltage (+2,5V) of the internal linear amplifier.
20	VRO	O	Reference voltage (set by pin 19) output.
21	CI	I	CTL clamp input.
22	CO	O	CTL amplifier output.
23	CTL G	—	CTL amplifier GND.
24	CTL A	I	Sets the CTL amplifier gain (negative input terminal)
25	CTL H	I	CTL pulse input.
26	AVDD	—	Analog system power supply (+5V).
27	VSYN	—	(AC GND)
28	PGMM	I	Switching position monostable multivibrator. Delay time constant of head switch position adjustment.

2. TAPE RUNNING POSITION ADJUSTMENT

(GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

ıe J-8 and lift the "Main circuit board". (See the SERVICE JIG AND TOOLS)

form the height adjustment for the following items to obtain the proper tape running position. (See Figure-1)

① Impedance roller
② Guide roller (Supply side)
③ Guide roller (Take up side)
④ Tape guide

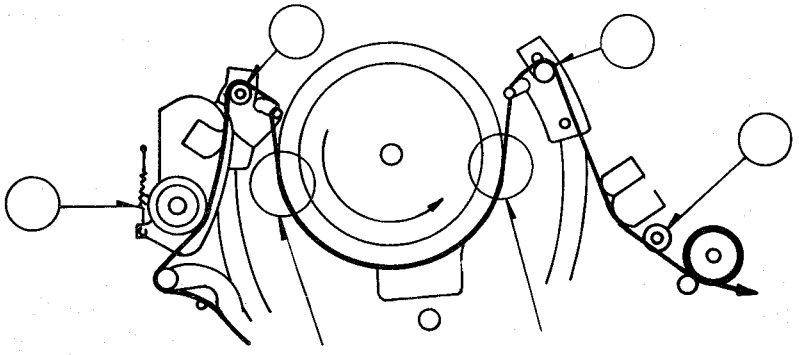


Fig-1

Load a blank tape and set the VCP to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Fig-1.

Operate the VCP between PLAY and STOP modes several times.

Observe the tape transport at the "Lead surface of the cylinder" during the PLAY mode, and confirm that tape runs smoothly along the "Lead surface of the cylinder" without slipping downward or upward. (See Figure-2)

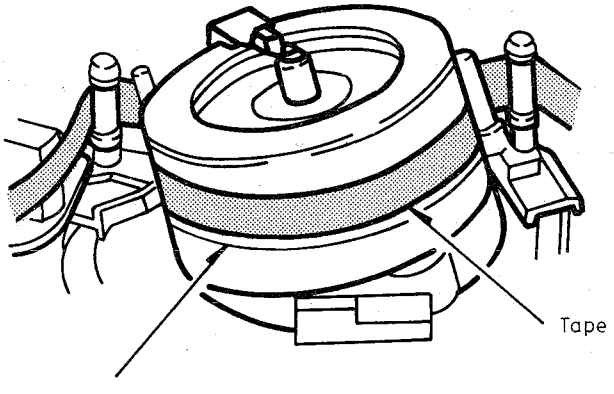
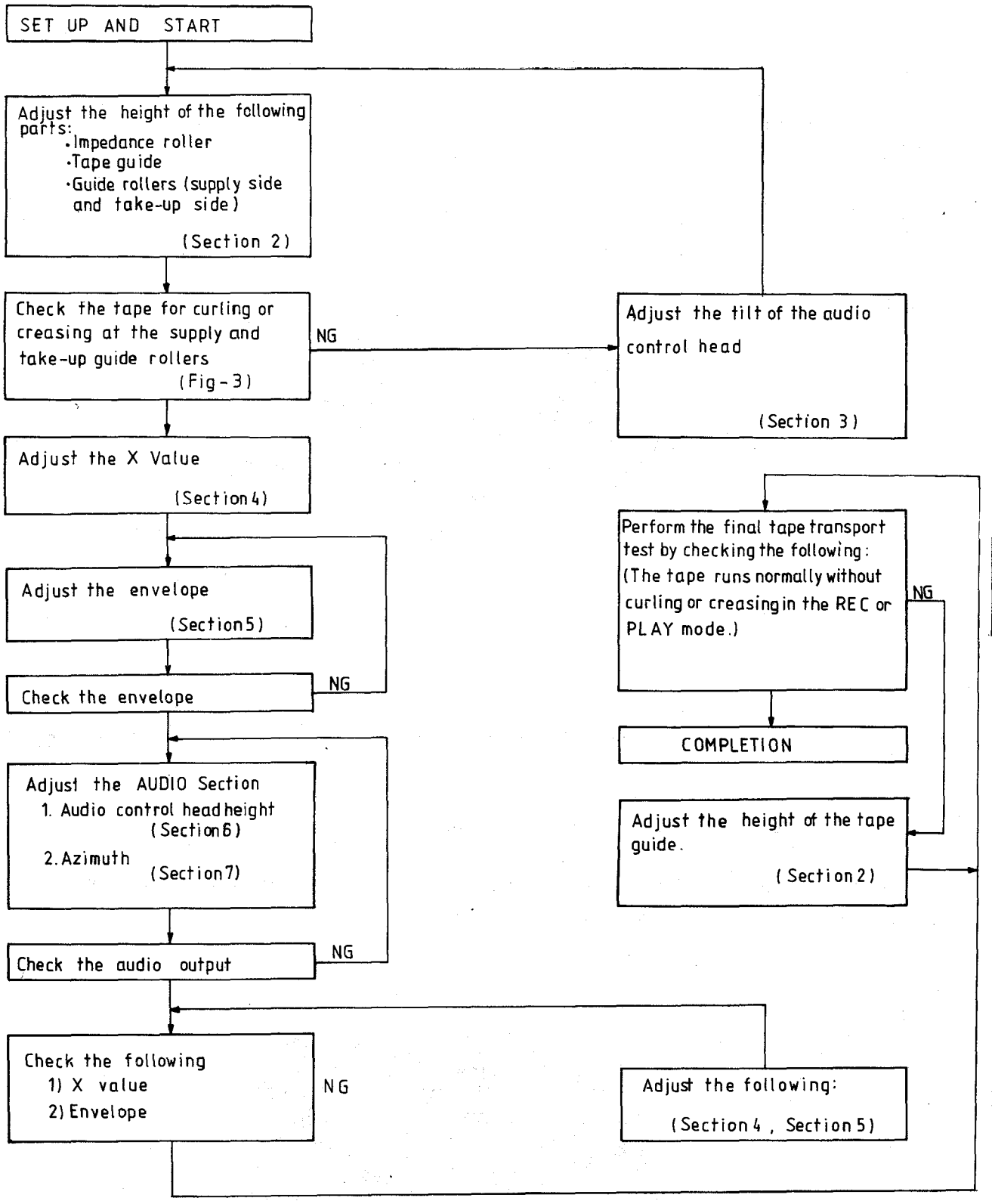


Fig-2

MECHANICAL ADJUSTMENT

1. Tape transport adjustment flowchart



7. Next adjust the "Guide roller" height. Insert the adjustment driver (J2) into the "Guide roller" top. (See Figure-5)
Adjust the height by turning the driver slightly so that the tape runs on the "Guide roller" as shown in Fig-3, and the lower edge of the tape runs along the "Lead surface of the cylinder".

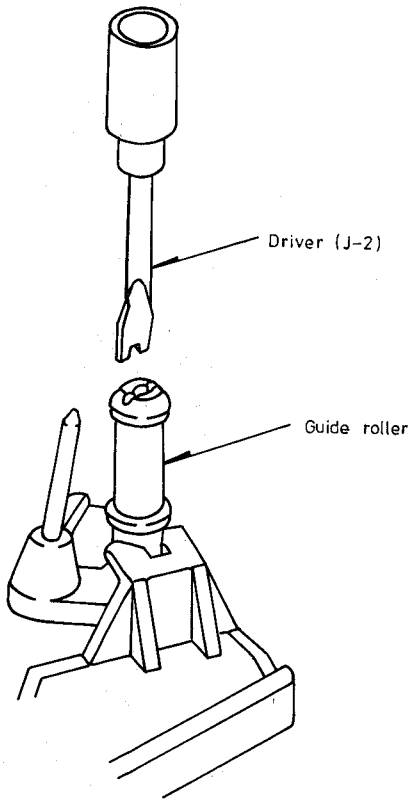
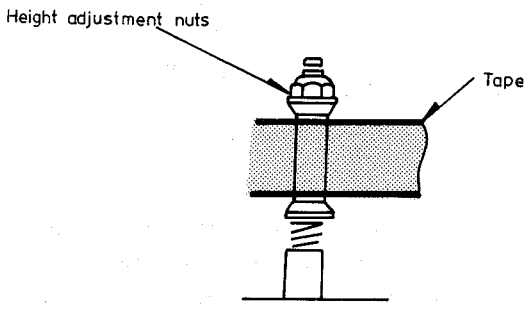


Fig-5



Tape Guide

Fig-6

8. After completion of the supply side "Guide roller" adjustments, adjust "Tape guide" so that tape runs as shown in Fig-6 and adjust the take up side "Guide roller" by using the same procedures as for the supply side adjustments.
In this case adjust the "Guide roller" height first.

9. Confirm that there is no curling or creasing at the "Impedance roller" (Both PLAY and REV modes). If there is any curling or creasing at the Impedance roller adjust the same procedures of Fig-6.

10. Finally confirm that there is no curling or creasing at the take-up side guide roller and tape guide. If there is any curling or creasing between the take-up side "Guide roller" and the "ACE head", adjust the "ACE head."

5. During loading, play and unloading, observe the tape at the supply and take-up "Guide rollers", "Tape guide" and "Impedance roller". Confirm that there is no curling or creasing etc.. as shown in Fig-3.

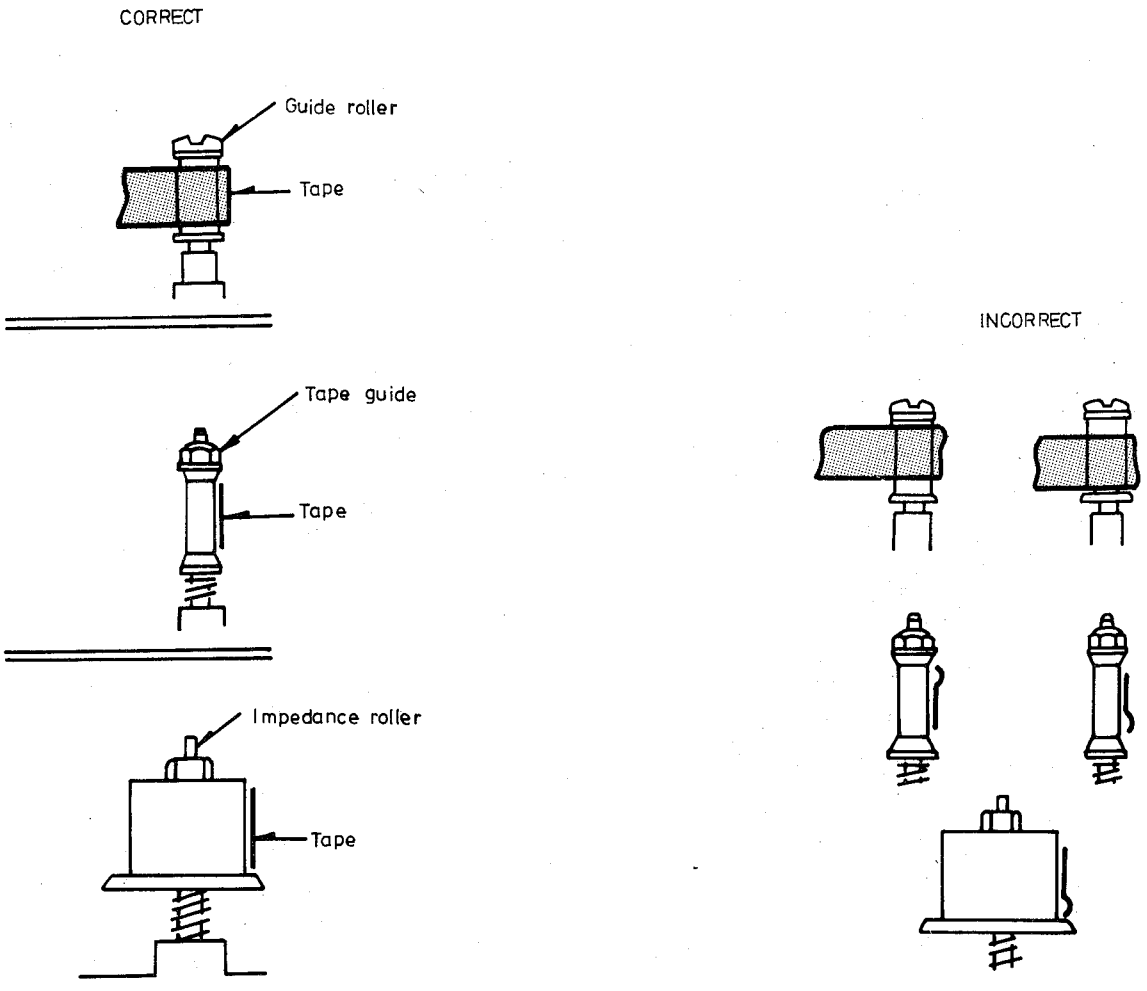


Fig-3

6. If any curling or creasing is noted adjust "Tape guide roller" and "Impedance roller" first. In this case, adjust the "Impedance roller" in both PLAY and REV modes so that the tape runs as shown in Fig-4.

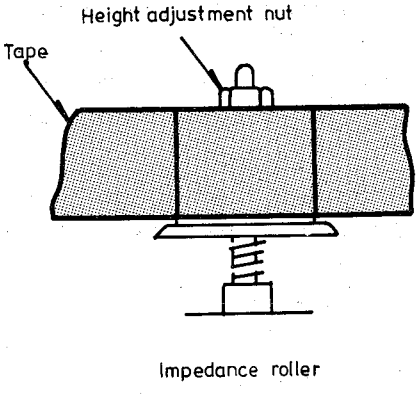


Fig-4

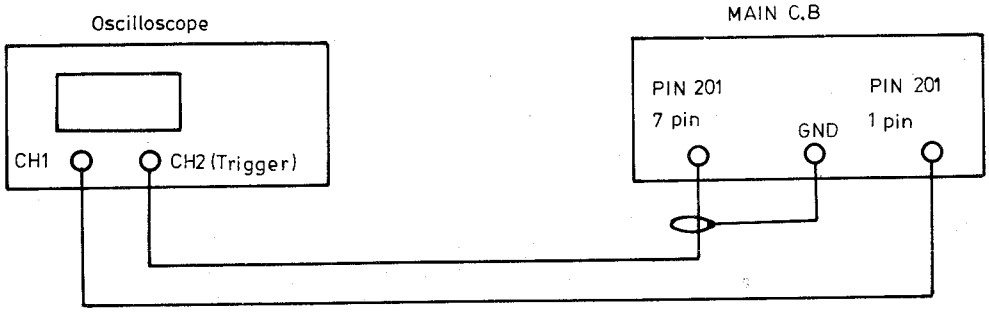
4. X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B PIN 201 pin (Y PB FM) PIN 201 pin (RF SWP)	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
X value adjustment nut	Maximum level (CH1 Y PB Signal)

TEST EQUIPMENT CONNECTING DIAGRAM



7

1. Connect the equipment as shown in Fig-8.
2. Adjust VR401 (Tracking Volume) to its center position (clockwise).
3. Adjust the "X value adjustment nut Ⓓ" for maximum PB FM Signal for CH1 by using TTV-P2 test tape. (See Figure-9)
4. After adjusting the "X value", check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating VR401 (Tracking volume).

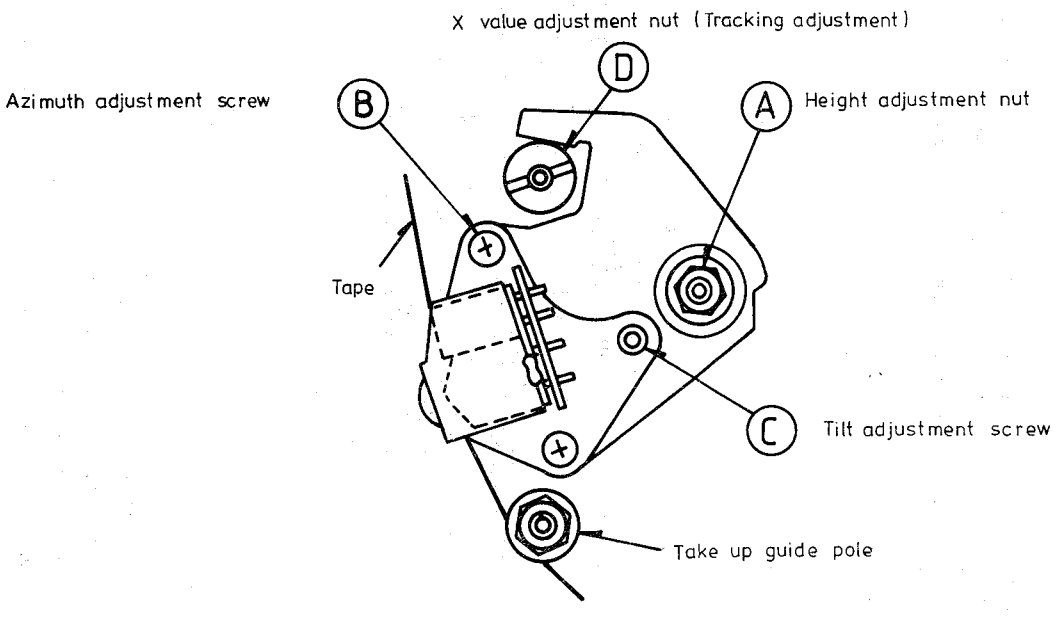


Fig-9

3. AUDIO CONTROL HEAD ADJUSTMENT

1. Load a recorded tape and set the it to PLAY mode.

2. Adjust the height of the edge of the "Audio track" on the "Audio control head" by using the height adjustment nut Ⓐ and the "Tilt adjustment screw" Ⓒ so that the tape transport is smooth at the "Take-up guide pole". Align the Audio control head height. (See Figure-7)

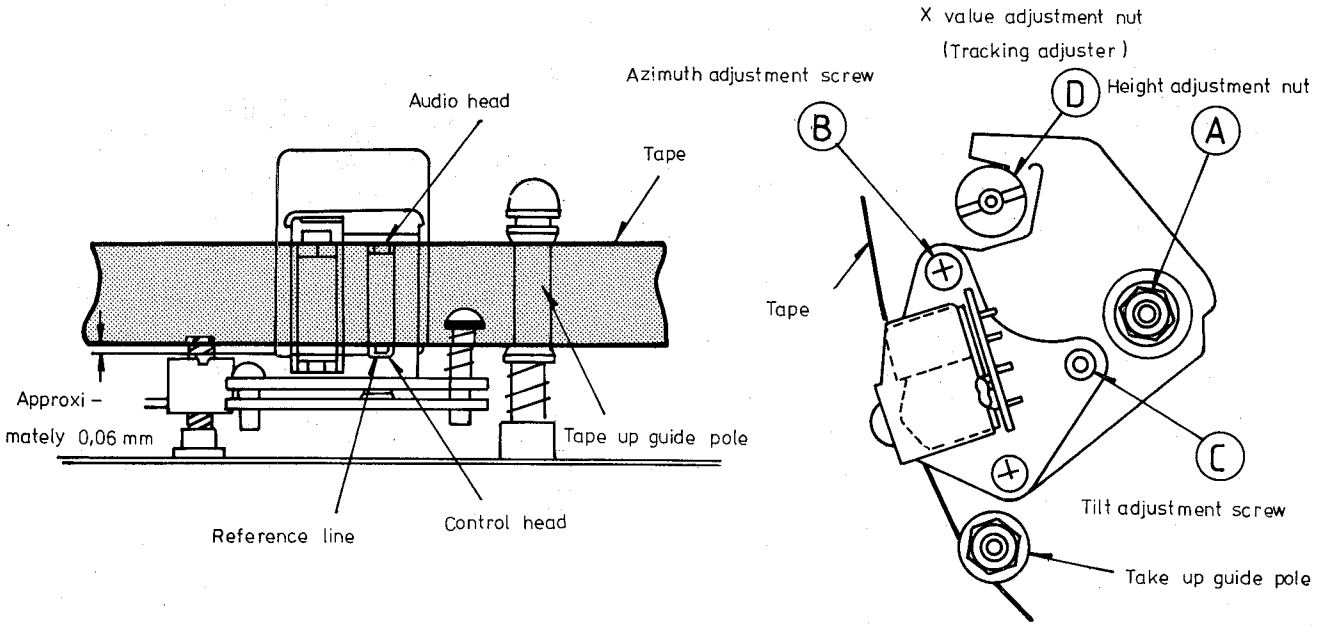


Fig. 7

3. The fine adjustment is not required at this time.
   The following conditions are sufficient:
   (a) Proper tape transport between the "Audio control head" and the "Take-up guide pole".
   (b) Stable SERVO system operation (proper pickup of tape's recorded control signal).

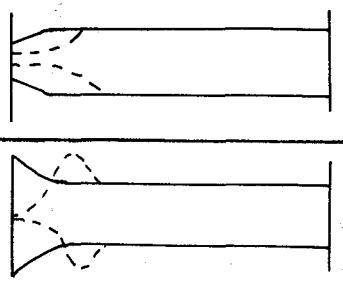
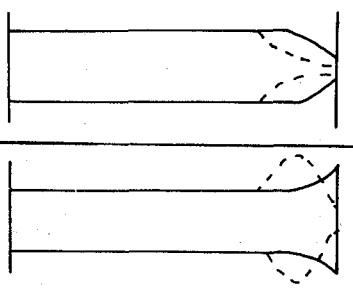
	Tape is too high	
	Supply side	Take up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.

Fig - 11

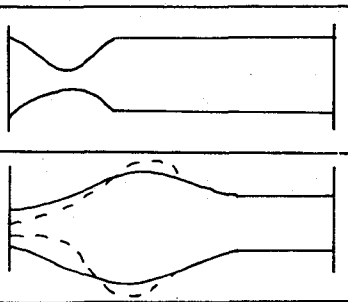
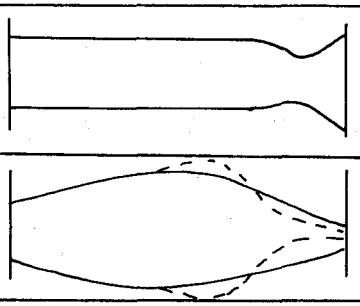
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions		
Adjustment	Supply side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.

Fig - 12

5. ENVELOPE WAVE FORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B PIN 201 1 pin (Y PB FM) PIN 201 7 pin (RF SWP)	Oscilloscope	PLAY (SP) MODE Tesl tape TTV-P2

ADJ. Location	ADJ. Value
Guide rollers	Maximum level and correct waveform (PB Y FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

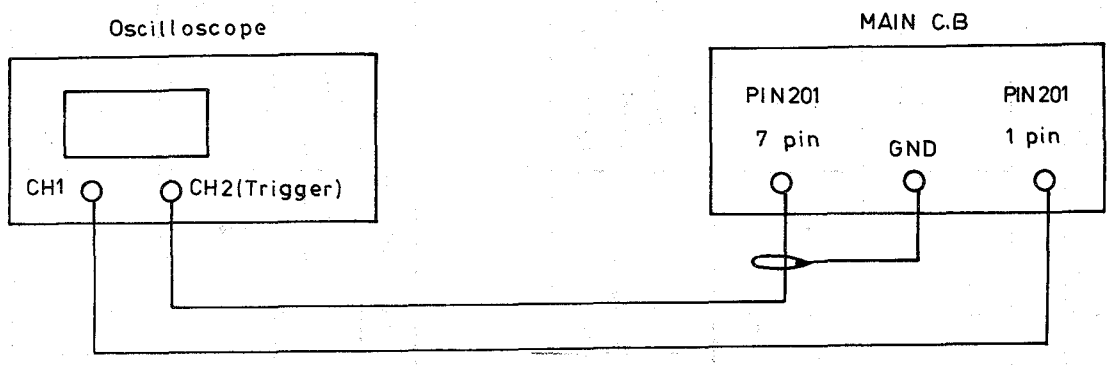


Fig - 10

1. Connect equipment as shown in Fig-10.

2. Playback the test tape TTV-P2.

3. The envelope waveform can be performed by adjusting the height of both the supply side and take-up side "Guide rollers".
   Finaly adjust the height of "Guide rollers" so that the envelope waveform is as flat as possible.

4. Set VR401 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained.
   Then rotate the VR401 (Tracking Volume) in both directions while adjusting the height of "Guide rollers", in order to obtain the envelope waveform which is as flat as possible.
   If the tape is above or lower the helical tape position, the envelope waveforms will take the shape as shown in Fig-11 and Fig-12.

5. Adjust for maximum flatness of the envelope waveform according to the Fig-11 and F-12.

6 After adjustment, rolale VR401 (Tracking Volume) counterclockwise and clockwise, and check that the waveform changes symmetrically.

7 Check the tape curl. (Refer to Section 2)

7

7. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Azimuth adjustment nut	Maximum level (AC voltmeter)

TEST EQUIPMENT CONNECTING DIAGRAMS

See Figure-13

Fig-14

1. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back TTV-P2 test tape, adjust the "Azimuth adjustment screw Ⓑ "so that the AC voltmeter's reading or oscilloscope waveform is brought to its maximum lebel.(See Figure-15)

Note: Fix the screw Ⓑ and Ⓒ with lock paint after readjustment.

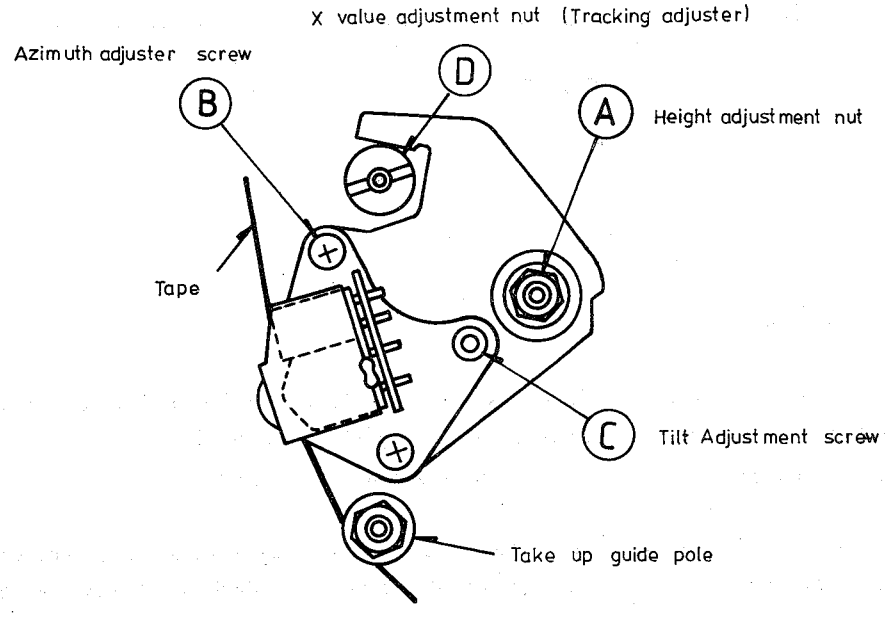


Fig – 15

6. AUDIO CONTROL HEAD HEIGHT/AUDIO CONTROL HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P1

ADJ. Location	ADJ. Value
Height adjustment nut Azimuth adjustment screw	Maximum lavel (AC voltmeter)
Tilt adjustment screw	

TEST EQUIPMENT CONNECTING DIAGRAMS

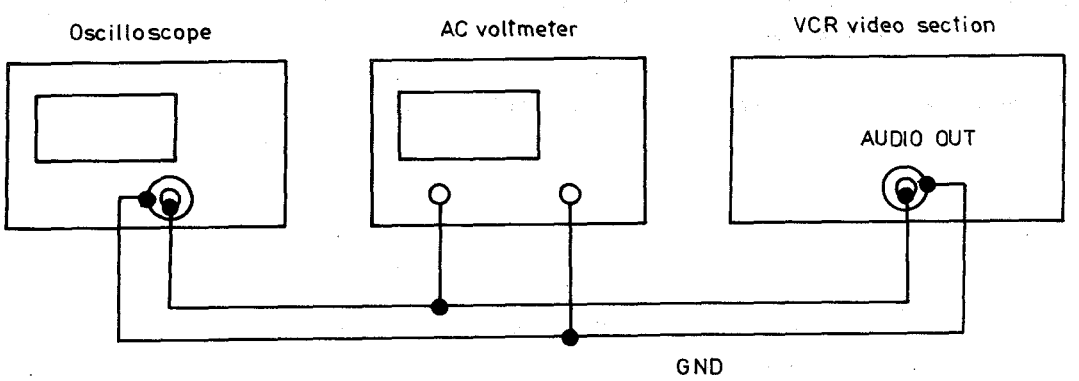


Fig-13

1. Connect equipment as shown in Fig-13.

2. Confirm that the running between the "Take-up guide roller" and the "ACE head" has no slack. If the tape has slack, take it up by turning the "Tilt adjustment screw Ⓒ". (See Figure-15)
   Then readjust " Guide roller " height in section 2 and the "X value" in section 4.

3. After confirming on the oscilloscope that a 1kHz audio signal is being output by playing back TTV-P1 test tape, adjust the "Height adjustment nut Ⓐ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure-7)

4. Adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure-7)

7

REF. NO.	PART NO.	DESCRIPTION
C335	*87-010-384-010	CAP, ELECT 100-25 SME
C336	*87-010-384-010	CAP, ELECT 100-25 SME
C337	*87-010-529-010	CAP, ELECT 1-50 BP
C338	*87-010-401-010	CAP, ELECT 1-50 SME
C339	*87-010-401-010	CAP, ELECT 1-50 SME
C340	*87-018-209-010	CAP, CERA U 0.1-50 F
C341	*87-018-209-010	CAP, CERA U 0.1-50 F
C343	*87-018-209-010	CAP, CERA U 0.1-50 F
C344	*87-018-209-010	CAP, CERA U 0.1-50 F
C345	*87-018-209-010	CAP, CERA U 0.1-50 F
C346	*87-018-209-010	CAP, CERA U 0.1-50 F
C350	*87-010-265-010	CAP, ELECT 33-16 SME
C370	*87-018-205-010	CAP, CERA U 0.022-25 F
CF201	*87-008-416-010	FILTER, SFS 5.06 ME
CL301	*87-008-394-010	CERAMIC FILTER CST 4.19MGW
DL201	*89-JU7-642-010	DL, ADL-FE1844W
J201	*89-JU7-646-010	JACK, PIN 2 2(AUDIO/VIDEO OUT)
L201	*87-003-050-010	COIL, 47uH
L202	*87-003-050-010	COIL, 47uH
L203	87-005-208-010	COIL, 100uH
L204	*87-005-205-010	COIL, 56uH
L206	*87-003-150-010	COIL, 68uH LAL02
L207	*87-003-150-010	COIL, 68uH LAL02
L208	*87-003-146-010	COIL, 15uH LAL02
L209	*87-005-400-010	COIL, 18uH J
L210	*87-003-142-010	COIL, 3.3uH LAL02
L211	*87-003-284-010	COIL, 27uH LAL02
L301	*87-003-149-010	COIL, 47uH
L303	87-006-189-010	COIL, 220uH EL0909
L304	87-006-189-010	COIL, 220uH EL0909
LPF201	89-JU7-645-010	FILTER, LPF 3.15M
LPF202	89-JU7-644-010	FILTER, LPF 1M
⚠ R364	87-029-082-010	RES, FUSE 100-1/4W
⚠ R370	87-029-361-010	RES, FUSE 3.3-1/2W
⚠ R371	*87-029-361-010	RES, FUSE 3.3-1/2W
RF201	*89-JU9-607-010	MOD, RF MDLK 6E273A
SFR202	*87-024-168-010	SFR, 1K
SFR203	*87-024-170-010	SFR, 3.3 K
SFR302	*87-024-177-010	SFR, 220 K
SW 201	87-036-185-010	SW, SLIDE (PICTURE)
X 201	×89-JU7-641-010	CRYSTAL RESONATER 4.43M

= FRONT CIRCUIT BOARD SECTION =

C401	*87-015-681-010	CAP, ELECT 10 16
LED402	87-001-123-010	LED, SLZ-981C-02 (POWER)
LED405	87-001-124-010	LED, SLZ-381C-02 (REPEAT)
RB401	87-001-533-010	REMOTE UNIT GP1U501 (REMOTE SENSOR)
SW401	*87-036-142-010	SW, TACT (POWER)
SW402	87-036-142-010	SW, TACT (EJECT)
SW403	87-036-142-010	SW, TACT (STOP)
SW404	87-036-142-010	SW, TACT (PLAY)
SW405	87-036-142-010	SW, TACT (FF)
SW406	87-036-142-010	SW, TACT (REW)
SW407	87-036-142-010	SW, TACT (REPEAT)
SW408	87-036-142-010	SW, TACT (STILL)
VR401	87-024-220-010	VR, 250 KB (TRACKING)

= HEAD CIRCUIT BOARD SECTION =

C101	*87-015-676-010	CAP, ELECT 47-6.3
C102	*87-018-205-010	CAP, CERA U 0.022-25 F
C103	*87-018-205-010	CAP, CERA U 0.022-25 F
C104	*87-018-205-010	CAP, CERA U 0.022-25 F
C105	*87-018-205-010	CAP, CERA U 0.022-25 F

REF. NO.	PART NO.	DESCRIPTION
C106	*87-018-205-010	CAP, CERA U 0.022-25 F
C107	*87-018-134-010	CAP, CERA U 0.01-16 Y
C108	*87-018-143-010	CAP, CERA U 4.7P-50 CH
C109	*87-018-134-010	CAP, CERA U 0.01-16 Y
C110	*87-018-134-010	CAP, CERA U 0.01-16 Y
C111	*87-018-116-010	CAP, CERA U 56P-50 SL
C112	*87-018-111-010	CAP, CERA U 27P-50 SL
C113	*87-018-125-010	CAP, CERA U 330P-50 B
C114	*87-018-113-010	CAP, CERA U 33P-50 SL
C116	*87-018-129-010	CAP, CERA U 680P-50 B
C117	*87-018-149-010	CAP, CERA U 15P-50 CH
C118	*87-018-149-010	CAP, CERA U 15P-50 CH
C801	*87-018-134-010	CAP, CERA U 0.01-16 Y
C802	*87-010-405-010	CAP, ELECT 10-50 SME
C803	*87-010-248-010	CAP, ELECT 220-10 SME
C804	*87-010-403-010	CAP, ELECT 3.3-50 SME
C805	*87-010-403-010	CAP, ELECT 3.3-50 SME
C806	*87-018-134-010	CAP, CERA U 0.01-16 Y
C807	*87-010-374-010	CAP ELECT 47-10
C810	*87-018-115-010	CAP, CERA U 47P
L101	*87-003-152-010	COIL, 100 uH
L102	*87-003-146-010	COIL, 15uH LAL02
L103	*87-003-284-010	COIL, 27uH LAL02
L104	*87-003-149-010	COIL, 47uH
L105	*87-003-147-010	COIL, 22 uH
L106	*87-003-147-010	COIL, 22 uH
L107	*87-003-288-010	COIL, 180uH LAL02
L801	*87-003-149-010	COIL, 47 uH

= POWER CIRCUIT BOARD SECTION =

⚠ C1	*S0-05C-001-010	CAP, FILM 0.22-250 V
C3	*S0-05C-001-040	CAP, ELECT 82-400 V
C4	*S0-05C-001-050	CAP, FILM 0.047-600 V
C5	*S0-05C-001-070	CAP, ELECT 1-400 V
C6	*S0-05C-003-030	CAP, FILM 0.01-50 V
C7	*S0-9EC-000-070	CAP, ELECT 680-25 V
C9	*S0-9EC-000-070	CAP, ELECT 680-25 V
⚠ F1	S0-057-001-010	FUSE, T1 6A 250V
⚠ J1	S0-051-NLE-T00	AC JACK (AC)
⚠ L1	*S0-05L-001-010	COIL, CHOKE 18 MMH 0.5
L2	*S0-05L-002-010	COIL, CHOKE 40uH 1A
L3	*S0-05L-002-010	COIL, CHOKE 40uH 1A
PC1	S0-05P-C01-010	PHOTO COUPLER
R2	*S0-05R-001-030	RES, CARBON 510-1/2W
R4	*S0-05R-001-050	RES, CARBON 27-1/2 W
R5	*S0-05R-001-050	RES, MF 27-1W
⚠ R6	S0-05R-001-070	RES, FUSE 120-1/4 W
R8	*S0-05R-003-040	RES, CARBON 240-1/2W
R10	*87-025-306-010	RES, MF 5.6 K 1/4W
R11	*S0-9ER-000-110	RES, MF 200-270
R12	*87-025-403-010	RES, MF 1.5 1/4W
R13	*87-025-245-010	RES, MF0 820 1W
R21	*S0-05R-001-010	RES, WIRE WOUND 2.2
T1	S0-9ET-000-010	TRANSFORMER, TS29K20

= BASE CIRCUIT BOARD SECTION =

PCB E	*S8-059-133-020	BASE PCB ASSY
CP1	S6-808-080-030	PHOTO(REEL) SENSOR

= RELAY CIRCUIT BOARD-1 SECTION =

PCB F	*S8-059-013-470	RELAY PCB-1 ASSY

= SWITCH CIRCUIT BOARD SECTION =

PCB-G	*S8-059-163-200	SWITCH PCB ASSY (W/S)

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ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
=IC=		
	SO-051-C02-010	IC,AN1431T-TA
	SO-051-C02-040	IC,AN78M05F
	SO-9E1-C00-030	IC,AN78N09
	87-001-853-010	IC,BA6209-V3
	87-001-777-010	IC,BA6219B
	87-001-938-010	IC,LA7311
	87-001-774-010	IC,LA7320
	87-001-773-010	IC,LA7323
	87-001-784-010	IC,LA7331N
	87-001-771-010	IC,LC8992
	87-001-180-010	IC,M5223L
	SO-05H-IC1-010	IC,MA2830
	89-JU7-614-010	IC,MN67481P
	87-027-939-010	IC,NJM4558S
	87-020-923-010	IC,PST523D
	89-JU7-616-010	IC,UPD75108CW-A47
= TRANSISTOR =		
	89-110-484-010	TRANSISTOR, 2SA1048Y
	89-207-333-010	TRANSISTOR, 2SB733K B
	89-320-015-010	TRANSISTOR,2SC2001K
	89-324-584-010	TRANSISTOR,2SC2458Y
	89-324-585-010	TRANSISTOR,2SC2458GR
	89-327-854-010	TRANSISTOR, 2SC785E
	87-026-501-010	TRANSISTOR, DTA115ES
	87-026-219-010	TRANSISTOR,DTA 144ES
	87-026-218-010	TRANSISTOR, DTC144ES
	SO-050-002-020	TRANSISTOR,UN4211
= DIODE =		
	87 020 465 010	DIODE, 1SS133
	87 020 752 010	DIODE, 1SS270A TD
	SO 05D 002 050	DIODE,HZ24PB TK
	SO 05D 001 030	DIODE,HZ4.3PC TK
	SO 05D 001 010	DIODE,S1WBA60
	SO 05D 002 010	DIODE, S3LA20 04P15
	SU S10 40M 000	DIODE,US1040M
= MAIN CIRCUIT BOARD SECTION =		
BPF201	* 89-JU7-643-010	FILTER BPF 4.43M
C181	* 87-010-374-010	CAP,ELECT 47-10
C182	* 87-018-132-010	CAP,CERA U 2200P-16 X
C183	* 87-010-405-010	CAP ELECT 10-50 SME
C185	* 87-010-405-010	CAP,ELECT 10-50 SME
C186	* 87-010-382-010	CAP,ELECT 22-25 SME
C187	* 87-010-374-010	CAP, ELECT 47-10
C188	* 87-018-124-010	CAP,CERA U 270P-50B
C189	* 87-010-405-010	CAP,ELECT 10-50 SME
C190	* 87-018-131-010	CAP, CERA U 1000P-50B
C201	* 87-010-248-010	CAP,ELECT 220-10 SME
C203	* 87-010-374-010	CAP, ELECT 47-10
C204	* 87-018-205-010	CAP,CERA U 0.022-25F
C205	* 87-010-263-010	CAP, ELECT 100-10
C206	* 87-018-134-010	CAP, CERA U 0.01-16Y
C208	* 87-018-134-010	CAP, CERA U 0.01-16Y
C209	* 87-010-263-010	CAP,ELECT 100-10
C210	* 87-010-402-010	CAP, ELECT 2.2-50 SME
C212	* 87-010-403-010	CAP,ELECT 3.3-50 SME
C213	* 87-018-134-010	CAP, CERA U 0.01-16Y
C216	* 87-010-371-010	CAP, ELECT 470-6.3
C217	* 87-018-118-010	CAP,CERA U 82P-50 B
C218	* 87-018-119-010	CAP,CERA U 100P-50 B
C219	* 87-018-119-010	CAP,CERA U 100P-50 B
C220	* 87-018-113-010	CAP,CERA U 33P-50 SL
C222	* 87-018-119-010	CAP, CERA U 100P-50 B
C224	* 87-018-134-010	CAP, CERA U 0.01-16Y
C225	* 87-010-546-010	CAP, ELECT 0.33-50 SME
C226	* 87-010-404-010	CAP,ELECT 4.7-50 SME
C227	* 87-010-401-0,10	CAP, ELECT 1-50 SME
C228	* 87-018-134-010	CAP, CERA U 0.01-16Y
C229	* 87-010-405-010	CAP, ELECT 10-50 SME
C230	* 87-018-122-010	CAP, CERA U 180P-50B
C231	* 87-010-402-010	CAP, ELECT 2.2-50 SME
C232	* 87-010-263-010	CAP, ELECT 100-10
C233	* 87-018-205-010	CAP, CERA U 0.022-25F
C234	* 87-018-110-010	CAP, CERA U 24P-50 SL
C235	* 87-018-118-010	CAP, CERA U 82P-50 B
C236	* 87-018-110-010	CAP, CERA U 24P-50 SL
C237	* 87-010-402-010	CAP, ELECT 2.2-50 SME
C251	* 87-010-401-010	CAP,ELECT 1-50 SME
C252	* 87-018-134-010	CAP, CERA U 0.01-16Y
C254	* 87-018-118-010	CAP, CERA U 82P-50B
C256	* 87-018-134-010	CAP, CERA U 0.01-16Y
C257	* 87-018-205-010	CAP, CERA U 0.022-25F
C259	* 87-010-401-010	CAP,ELEKT 1-50 SME
C260	* 87-010-401-010	CAP,ELECT 1-50 SME
C261	* 87-010-401-010	CAP,ELECT 1-50 SME
C262	* 87-018-208-010	CAP, CERA SS 0.047-50F
C263	* 87-018-134-010	CAP, CERA U 0.01-16Y
C264	* 87-018-134-010	CAP, CERA U 0.01-16Y
C266	* 87-010-263-010	CAP, ELECT 100-10
C267	* 87-018-205-010	CAP, CERA U 0.022-25F
C268	* 87-010-263-010	CAP, ELECT 100-10
C269	* 87-018-205-010	CAP, CERA U 0.022-25F
C270	* 87-018-134-010	CAP, CERA U 0.01-16Y
C271	* 87-018-134-010	CAP, CERA U 0.01-16Y
C272	* 87-018-119-010	CAP, CERA U 100P-50B
C275	* 87-018-205-010	CAP, CERA U 0.022-25F
C276	* 87-018-205-010	CAP, CERA U 0.022-25F
C281	* 87-018-134-010	CAP, CERA U 0.01-16Y
C292	* 87-018-209-010	CAP, CERA U 0.1-50F
C301	* 87-010-263-010	CAP, ELECT 100-10
C302	* 87-0,18-134-010	CAP, CERA U 0.01-16Y
C308	* 87-018-134-010	CAP, CERA U 0.01-16Y
C309	* 87-010-263-010	CAP, ELECT 100-10
C310	* 87-015-681-010	CAP, ELECT 10-16
C311	* 87-018-401-010	CAP, ELECT 1-50 SME
C314	* 87-010-544-010	CAP, ELECT 0.1-50
C315	* 87-010-405-010	CAP, ELECT 10-50 SME
C316	* 87-010-615-010	CAP, ELECT 2.2-50BP
C317	* 87-018-134-010	CAP, CERA U 0.01-16Y
C318	* 87-015-681-010	CAP, ELECT 10-16
C319	* 87-010-374-010	CAP, ELECT 47-10
C320	* 87-010-405-010	CAP, ELECT 10-50 SME
C322	* 87-010-374-010	CAP, ELECT 47-10
C323	* 87-018-134-010	CAP, CERA U 0.01-16Y
C324	* 87-018-205-010	CAP, CERA U 0.022-25F
C325	* 87-018-205-0,10	CAP, CERA U 0.022-25F
C326	* 87-015-677-0,10	CAP, ELECT 100-6.3
C327	* 87-015-692-010	CAP, ELECT 0.22-50
C328	* 87-015-681-010	CAP, ELECT 10-16
C329	* 87-018-208-010	CAP, CERA SS 0.047-50F
C330	* 87-018-205-010	CAP, CERA U 0.022-25F
C331	* 87-015-677-010	CAP, ELECT 100-6.3
C332	* 87-018-134-010	CAP, CERA U 0.01-16Y
C333	* 87-018-208-010	CAP, CERA SS 0.047-50F
C334	* 87-018-208-010	CAP, CERA SS 0.047-50F

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SŁOWNICZEK ANGIELSKO - POLSKI

align	- ustawiać
assembly	- zespół, montaż
back tension	- przeciwciąg
belt	- pasek, taśma
bottom view	- widok od dołu
bracket	- wspornik
brake	- hamulec
cabinet front assy	- maskownica
cam	- krzywka
clutch	- sprzęgło
collar	- pierścień
connector	- gniazdo, złącze
drive	- sterujący
drum	- bęben
eject arm	- ramię wyrzucania kasety
erase head	- głowica kasująca
extension	- przedłużenie
figure	- rysunek
flange	- stopka, ramię
flywheel	- koło zamachowe
friction gear	- przekładnia cierna
gear	- koło zębate, przekładnia
guide	- prowadnica
head assembly	- płat
head puller	- ściągacz głowicy
holder	- oprawka, uchwyt
hook	- hak, zaczep
idler	- koło pasowe i jałowe, koło zębate pośredniczące
lever	- dźwignia
loading	- ładowanie
loading pulley	- koło pasowe ładowania
main	- główny
marking	- znacznik
match	- dopasowanie
mirror	- lusterko
motor	- silnik
nut	- nakrętka
reel sensor	- czujnik bębna dowijania
release	- zwolnić
remove	- usunąć, zdjąć
restore	- przywrócić
roller	- wałek, rolka
screws	- śruba, wkręt
sleeve	- tuleja
spring	- sprężyna
stud	- śruba dwustronna, kołek gwintowany
support	- oparcie, podpora
take off	- zdjąć
tape	- taśma
torque meter	- miernik momentu
tracking	- śledzenie
wormwheel	- koło ślimakowe, ślimacznica

REF. NO.	PART NO.	DESCRIPTION
=RELAY CIRCUIT BOARD-2 SECTION=		
=RELAY CIRCUIT BOARD-3 SECTION=		
=RELAY CIRCUIT BOARD-4 SECTION=		
PCB-J	*S8-059-013-050	RELAY PCB-4 ASSY
=RELAY CIRCUIT BOARD-5 SECTION=		
=ACE HEAD CIRCUIT BOARD SECTION=		
ACEH	S6-204-150-080	ACE HEAD HV224206 (W/PCB-L)
=END SENSOR CIRCUIT BOARD SECTION=		
	*S8-059-163-010	SENSOR PCB LM ASSY(W/PCB-M)
=START CIRCUIT BOARD SECTION=		
	*S8 059 163 010	SENSOR PCB RM ASSY(W/PCB-N)
=LAMP CIRCUIT BOARD SECTION=		
LED1	*S8 059 133 030	LED ASSY (W/PCB-O)
=MISCELLANEOUS=		
	S8-059-010-160	UPPER DRUM (W/VIDEO HEAD)
	*S8-059-013-040	LOWER DRUM ASSY
DS1	*S6-808-080-040	DEW SENSOR EYH S10R
M1	S6-004-090-010	CYLINDER MOTOR TM82
M2	S8 059 073 020	CAPSTAN MOTOR ASSY
M3	S8 059 113 010	LOADING MOTOR ASSY

7. "FE PLATE" AND "ACE HEAD" REMOVAL (See Figure-6)

1. "FE plate" Removal

1) Remove Nut Ⓐ .

2) Take out the "Impedance roller" and pull up the "FE plate".

(Take care not to lose parts "Impedance roller","Impedance roller sleeve","Tape guide frange A"."Tape guide flange spring" and "Plane washer 3 x 8 x 0.5" at the time of the "FE plate removal".)

3) Remove 1 screw Ⓑ and take off the "Full erase head".

2. "ACE head" Removal

1) Remove 3 screws(Ⓒx1, Ⓓx1, Ⓔx1) and "Azimuth spring".

2) Remove "ACE head".

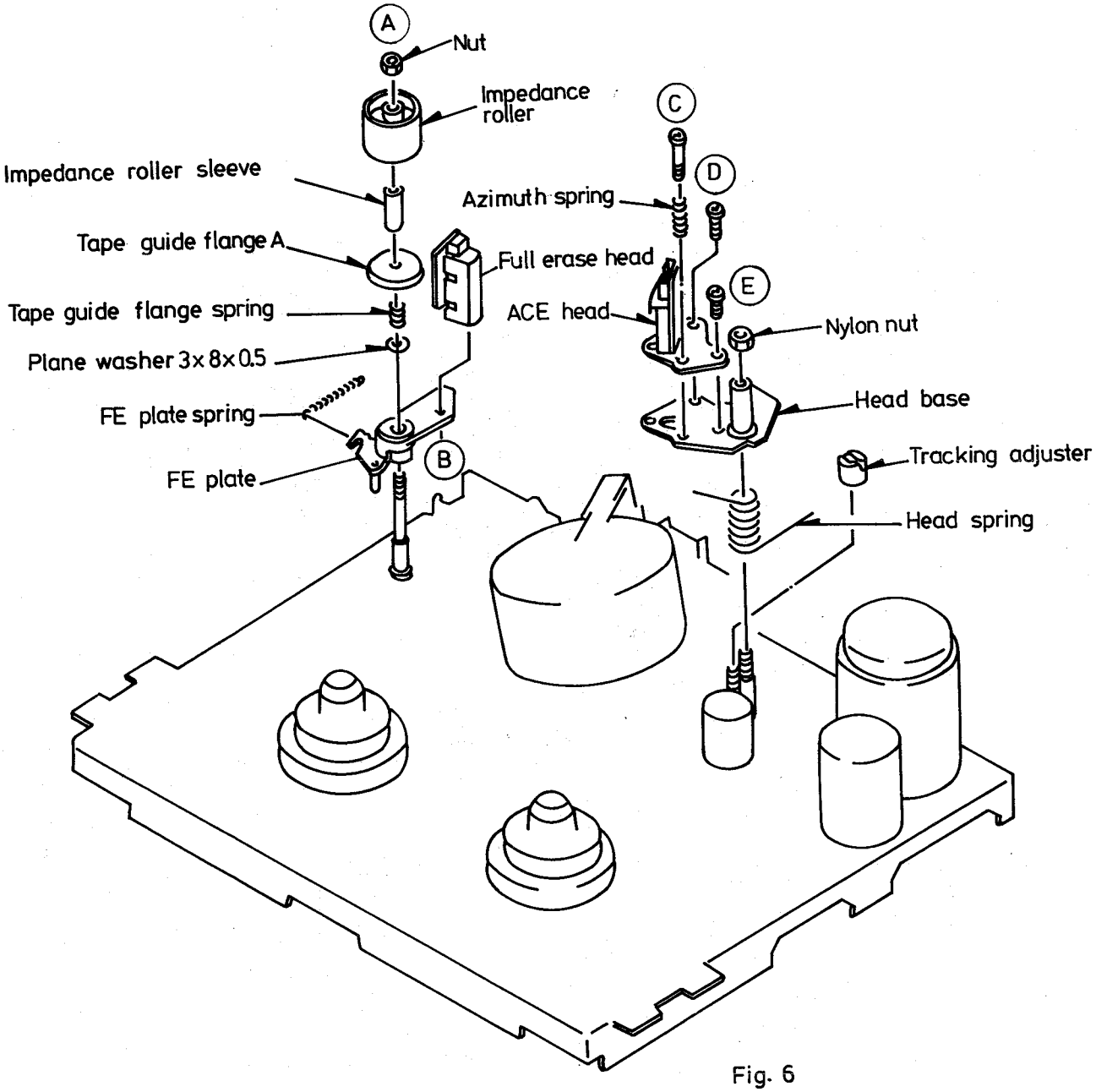

Fig. 6

6. "PHOTO SENSOR ASSY" (See Figure-5)

1. "Lamp holder ASSY" Removal
   1) Remove I screw (A) and take off the "T soft brake ASSY".
      (At this time never take off the "T-spring, soft brake ASSY".)
   2) Relase the "Lamp holder ASSY" from hook (a) of the chassis and turn it counterclockwise to remove it from the chassis.
2. "Switch C.B","Sensor quide" and "End sensor C.B" Removal
   1) Remove I screw (B) and take off the "Switch C.B".
   2) Remove I screw (C) and take off the "Sensor quide".
   3) Remove I screw (D) and take off the "End sensor C.B".
3. "Sensor guide" and "Start sensor C.B" Removal
   1) Removal I screw (E) and take off the "Sensor guide".
   2) Removal I screw (F) and take off the "Start sensor C.B".

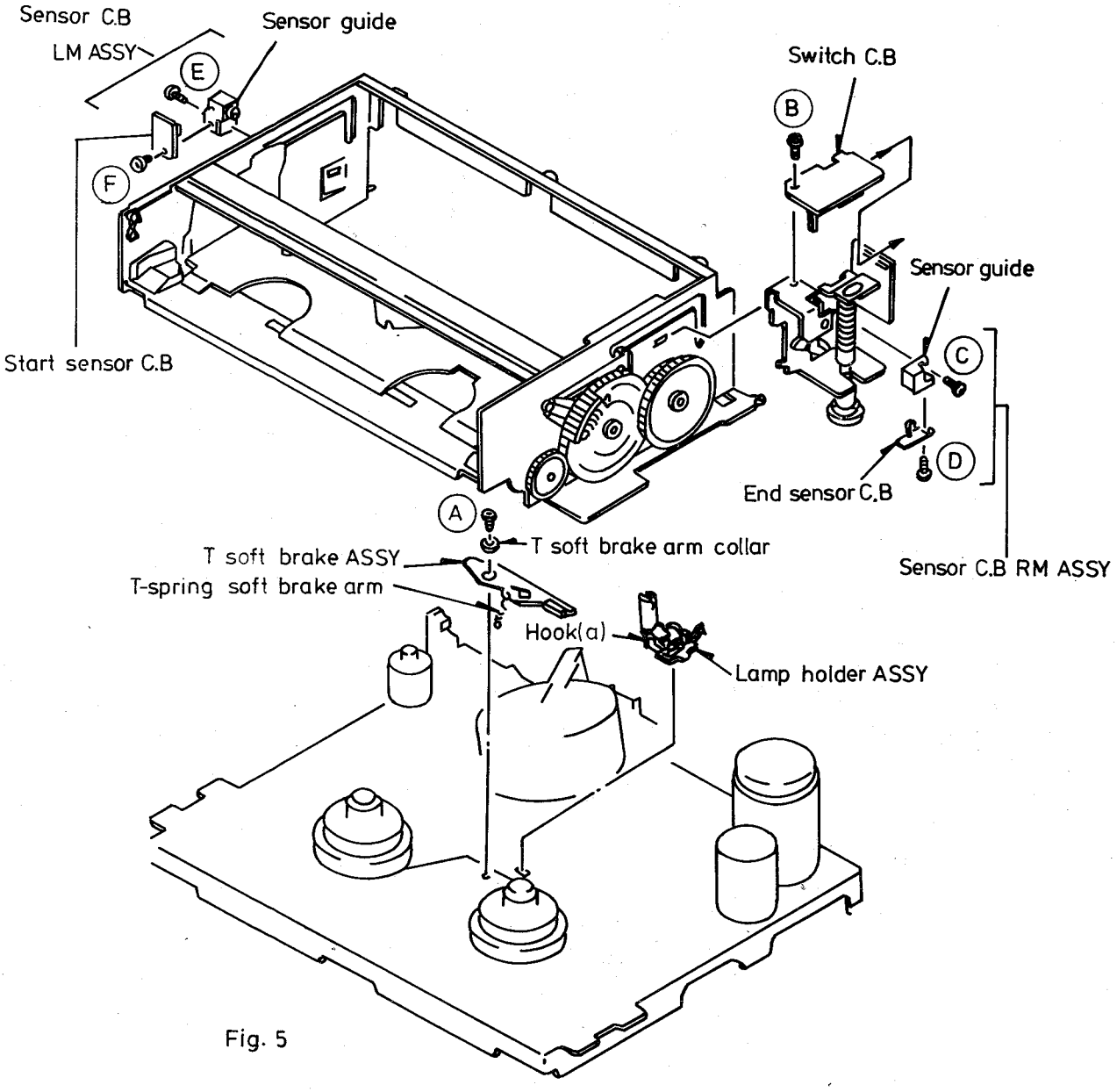

Fig. 5